Chemistry Formula Sheet

Chapter by chapter, topic by topic. Written by the PadhoNa team for quick revision.

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CHAPTER 3

Classification of Elements and Periodicity in Properties

Periodic trends

ACROSS A PERIOD (LEFT → RIGHT)

$$\text{atomic radius}\downarrow;\ \text{ionisation enthalpy}\uparrow;\ \text{electronegativity}\uparrow;\ \text{metallic character}\downarrow$$

DOWN A GROUP

$$\text{atomic radius}\uparrow;\ \text{ionisation enthalpy}\downarrow;\ \text{electronegativity}\downarrow$$

EFFECTIVE NUCLEAR CHARGE

$$Z_{\text{eff}} = Z - \sigma\ (\text{screening constant})$$

ELECTRON GAIN ENTHALPY

$$\text{most negative: Cl}>\text{F}\ (\text{small size of F});\qquad \text{noble gases positive}$$

ISOELECTRONIC SPECIES

$$\text{radius falls as nuclear charge rises: } \text{O}^{2-} > \text{F}^{-} > \text{Na}^{+} > \text{Mg}^{2+}$$

Electronic configuration and blocks

$$\text{s-block: } ns^{1-2};\ \text{p-block: } ns^2np^{1-6};\ \text{d-block: } (n-1)d^{1-10}ns^{0-2};\ \text{f-block: } (n-2)f^{1-14}$$

ANOMALOUS CONFIGURATIONS

$$\text{Cr: } 3d^5 4s^1;\qquad \text{Cu: } 3d^{10}4s^1$$

Nomenclature (Z > 100)

$$0\ \text{nil},\ 1\ \text{un},\ 2\ \text{bi},\ 3\ \text{tri},\ 4\ \text{quad},\ 5\ \text{pent},\ 6\ \text{hex},\ 7\ \text{sept},\ 8\ \text{oct},\ 9\ \text{enn} + \text{-ium}$$

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