

EXAM-DAY · 90-MIN REVISION CARD

Classification of Elements and Periodicity in Properties

Print this · Fold it · Carry to the exam-hall gate · Revise once · Then walk in.

FORMULAS & KEY RESULTS

Periodic law (modern, Moseley):
Properties are a periodic
function of atomic NUMBER (Z),
not mass.

Number of elements per period:
P1=2, P2=8, P3=8, P4=18,
P5=18, P6=32, P7=32.

Block assignment: last electron
in s → s-block (gp 1-2), p → p-
block (gp 13-18), d → d-block
(gp 3-12), f → f-block
(lanthanides+actinides).

Group for s/p block (1-18
numbering): s-block → group =
number of s electrons; p-block
→ group = 10 + number of p
electrons in outermost.

Group for d-block: group
number = (n-1)d electrons + ns
electrons.

Period = highest principal
quantum number n in the
configuration.

IUPAC nomenclature for Z>100:
digits → roots (0=nil, 1=un,
2=bi, 3=tri, 4=quad, 5=pent,
6=hex, 7=sept, 8=oct, 9=enn) +
suffix 'ium'. Example: Z=120 →
un-bi-nil-ium = Unbinilium (Ubn).

Atomic radius (covalent): trend
↓ across period, ↑ down
group. Range ~30 pm (H) to
~270 pm (Cs).

Cation < neutral atom; anion >
neutral atom. Among
isoelectronic: higher Z →
smaller radius.

Ionisation enthalpy (Δ_iH):
trend ↑ across period, ↓ down
group. EXCEPTIONS: Be > B
($2s^2$ stability), N > O ($2p^3$
half-filled stability).

Electron gain enthalpy ($\Delta_{eg}H$):
more NEGATIVE across period
(more energy released), less
negative down group.
EXCEPTION: Cl > F (small size of
2p, high e-e repulsion in F).

TOP 5 PYQ PATTERNS

1 IE anomaly: N>O or Be>B (half/full-filled stability)

2 marks · 85% of years

Write configs, identify half/full-filled, conclude

2 Atomic / ionic radius trend or isoelectronic ordering

3 marks · 80% of years

↓ across period, ↑ down group; cation

3 Electronegativity / group / block from Z

2 marks · 60% of years

Identify block → count electrons

Identify subshell + ns

(F vs Cl)

anomaly)

3 marks · 65% of

years

Cite small 2p shell

of F → e-e repulsion

5 Anomalous 2nd-period + diagonal relationship

3 marks · 50%
of years

Small size,
high EN, no d-
orbitals, max
covalency 4;
diagonal pairs
similar
polarising
power

90-MIN REVISION FLOW

0-15 min

Memorise long-form table layout: blocks (s/p/d/f), groups 1-18, periods 1-7, number of elements per period

15-30 min

Predict period/group/block for Z = 11, 17, 20, 24, 25, 29, 35, 53 — verify against periodic table

30-45 min

Atomic and ionic radii: across-period and down-group trends; arrange 3 sets of isoelectronic species

45-60 min

IE: trend + Be>B + N>O anomaly. EGE: trend + F

60-75 min

Electronegativity (Pauling scale), valence/oxidation state, anomalous 2nd-period properties, diagonal relationship

75-90 min

Solve 1 PYQ 3-marker (anomaly explanation) + 1 PYQ 5-marker (position prediction + trend); review marking scheme

Confidence, not anxiety. You've practised this all year. Trust your steps. Don't change strategy on exam morning.

Electronegativity (Pauling): F = 4.0 (max), Cs/Fr $\approx$ 0.7 (min). $\uparrow$ across period, $\downarrow$ down group.

Diagonal relationship pairs:
Li $\leftrightarrow$ Mg, Be $\leftrightarrow$ Al, B $\leftrightarrow$ Si — similar polarising power and EN.

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