

EXAM-DAY · 90-MIN REVISION CARD

Structure of Atom

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

FORMULAS & KEY RESULTS

Bohr energy: $E_n = -13.6/n^2$ eV (for H); for H-like ions multiply by Z^2

Bohr radius: $r_n = 0.529 \cdot n^2 / Z$ Angstrom ($Z=1$ for H)

Angular momentum: $mvr = n \cdot h / (2 \cdot \pi)$

Rydberg: $1/\lambda = R_H \cdot (1/n_1^2 - 1/n_2^2)$; $R_H = 1.097 \times 10^7 \text{ m}^{-1}$

Energy gap: $dE = E_2 - E_1 = h \cdot \nu = hc/\lambda$

de Broglie: $\lambda = h / (m \cdot v)$

Heisenberg: $\Delta x \cdot \Delta p \geq h / (4 \cdot \pi)$

Photoelectric (Einstein): $h \cdot \nu = W_0 + (1/2) m v^2 = W_0 + KE_{\text{max}}$

Threshold frequency: $\nu_0 = W_0 / h$

Aufbau order: 1s 2s 2p 3s 3p 4s 3d 4p 5s 4d 5p 6s 4f 5d 6p 7s ... (n+l rule, lower (n+l) first; if tie, lower n first)

Quantum numbers: n (shell, 1..inf), l (subshell 0..n-1), m_l (-l..+l), m_s (+/- 1/2)

Max electrons in shell = $2n^2$; in subshell = $2(2l+1)$

Constants: $h = 6.626 \times 10^{-34} \text{ J s}$, $c = 3 \times 10^8 \text{ m/s}$, $e = 1.6 \times 10^{-19} \text{ C}$, $m_e = 9.11 \times 10^{-31} \text{ kg}$

TOP 5 PYQ PATTERNS

1 H-spectrum line wavelength calc (Balmer / Lyman)

3 marks · 90% of years
Use Rydberg with correct n1

2 Bohr quantum numbers for last postulates/limitations

3 marks · 70% of years
Write 50 fig → identify last e- → read of year
3 postulates +
3 limitations —
bullet form

4 de Broglie / Einstein equation

2 marks · 55% of years
Plug constants in
SI units; show working

90-MIN REVISION FLOW

0-15 min

Re-read postulates of Bohr + (n+l) rule + 4 quantum numbers definitions

15-30 min

Practice 1 Lyman + 1 Balmer numerical (full working with units)

30-45 min

Write electronic configuration of Cr, Cu, K, Ca, Cl, Mn, Fe — verify (n+l) order + half-filled exceptions

45-60 min

Photoelectric numericals: given W_0 find threshold; given ν find KE

60-75 min

Limitations of Bohr (3 points), Heisenberg + de Broglie statement

75-90 min

Solve 1 PYQ 3-marker + 1 PYQ 5-marker against the clock; review marking

Confidence, not anxiety.

You've practised this all year.
Trust your steps. Don't change strategy on exam morning.
Helpline: **+91 70330 05444** · **readyforboards.com**