

Chemistry booklist: one unit, one book

Made from the 17 chemistry books I have read. For every unit of the Civil Services syllabus, Paper I and Paper II: the one best book, the part of it to read, and a shorter fast-lane book for those writing in 2027.

The whole booklist in three lines

12 of 17

books cover every unit. The other five play support roles or are not needed for CSE.

55%

of the marks asked in 2021–2025 sit in four books: Atkins, Clayden, Sykes and Pavia.

2 plans

Fast lane for Mains 2027 (8 main books). Deep lane for students still in college.

Civil Services 2027: Prelims 23 May, Mains from 20 August (UPSC calendar). IFoS students can use most of this map; check your own syllabus.



01 The idea: read the chapter, not the book

Every chemistry book has one strength. Atkins for quantum and surfaces, Silbey and Alberty for thermodynamics, Laidler for kinetics, Sykes for mechanisms, Pavia for spectra, J. D. Lee for inorganic facts. Take that strength for the unit it serves and leave the rest of the book.

Three questions before you open any book

1. Is this topic in the UPSC syllabus?
2. Has UPSC asked it in the last five to ten years?
3. Which book explains it best? (the map on pages 3 and 4)

No to 1 or 2? Close the book and move on.

Read a chapter the UPSC way

1

Read the syllabus line

2

Open its PYQs from the last 10 years

3

Read only the sections that answer them

4

Make a one-page sheet: definitions, equations, diagrams, two examples

5

Write one PYQ in exam time: 7 minutes for 10 marks

Small trick

On your printed syllabus, write the book name and page number next to every line. The syllabus becomes the index of your preparation.

Five mistakes to avoid

The mistake	Do this instead
Buying every book on the list	Buy a book when you reach its unit
Reading cover to cover	Read the chapter, not the book
Changing books in the middle of a unit	Finish the unit from one book
Reading without PYQs	Let the PYQs decide what to read
Reading without writing	End every unit with one written answer



02 Paper I: physical and inorganic

Unit numbers follow the UPSC syllabus. The fast-lane column is for students writing in 2027; "same" means the best book is also the short book.

Unit	Best book: read only this	Add-on, only for	Fast lane	Marks
1 Atomic structure	Atkins Quantum theory chapters: postulates, particle in a box, hydrogen atom, shapes of orbitals	—	Puri, Sharma & Pathania	105
2 Chemical bonding	J. D. Lee Ionic bonding, Born–Haber, VB theory, resonance, MO theory of diatomics	Huheey : MO diagrams of NO, CO, HF and CN [−]	same	145
3 Solid state	Puri, Sharma & Pathania Crystal systems, Miller indices, Bragg's law, radius ratio, NaCl/ZnS/CsCl/CaF ₂ , defects	Atkins : X-ray diffraction in depth	same	125
4 Gaseous state and transport	Atkins Kinetic theory, Maxwell distribution, collisions, effusion, viscosity and thermal conductivity	—	Puri, Sharma & Pathania	115
5 Liquid state	Atkins Liquid surfaces: surface tension, Kelvin equation, contact angle, capillary action	—	Puri, Sharma & Pathania	75
6 Thermodynamics	Silbey & Alberty First to third law, Maxwell relations, thermodynamic equation of state, J–T effect, equilibrium	—	Puri, Sharma & Pathania	145
7 Phase equilibria and solutions	Silbey & Alberty Clausius–Clapeyron, binary systems, critical solution temperatures, partial molar and excess functions	—	Puri, Sharma & Pathania	115
8 Electrochemistry	Atkins Electrolyte solutions and Debye–Hückel, cells and emf, electrode processes, overpotential	Skoog : Amperometry and ion-selective electrodes	Puri, Sharma & Pathania	160
9 Chemical kinetics	Laidler Rate equations, complex and chain reactions, explosions, fast reactions, collision and TST	—	Puri, Sharma & Pathania	135
10 Photochemistry	Atkins Absorption, decay routes of excited states, quantum yield	Laidler : H ₂ –Br ₂ and H ₂ –Cl ₂ photochemical chains	Puri, Sharma & Pathania	120
11 Surface phenomena and catalysis	Atkins Langmuir and BET isotherms, surface area, heterogeneous catalysis	—	Puri, Sharma & Pathania	100
12 Bio-inorganic chemistry	Huheey Chemistry of life: ion pumps, haemoglobin and myoglobin, cytochromes, ferredoxins	—	same	105
13 (i) Coordination: bonding, magnetism, spectra	Huheey Crystal and ligand field theory, magnetism, electronic spectra of complexes	—	same	70
13 (ii) Coordination: isomerism, trans effect, stability	Miessler & Tarr Isomerism, nomenclature, trans effect, substitution in square-planar complexes, stability	—	J. D. Lee	95
13 (iii–iv) Carbonyls and organometallics	Miessler & Tarr 18-electron rule, carbonyls, nitrosyls, olefin and Cp complexes, oxidative addition, insertion, clusters	—	Huheey	135
14 Main group chemistry	J. D. Lee Boranes, borazines, phosphazenes, silicates, silicones, interhalogens, S–N and noble gas compounds	Huheey : Wade's rules for boranes	same	130
15 f-block elements	J. D. Lee Lanthanides and actinides: separation, oxidation states, magnetism, spectra, lanthanide contraction	—	same	115

Marks = all CSE Chemistry PYQ parts of that unit, 2021–2025, including internal choices. Read the chapters by name: chapter numbers change between editions.



Paper II: organic and spectroscopy

Peter Sykes carries the whole mechanism part. Reagents (unit 5) are the single biggest topic of the paper.

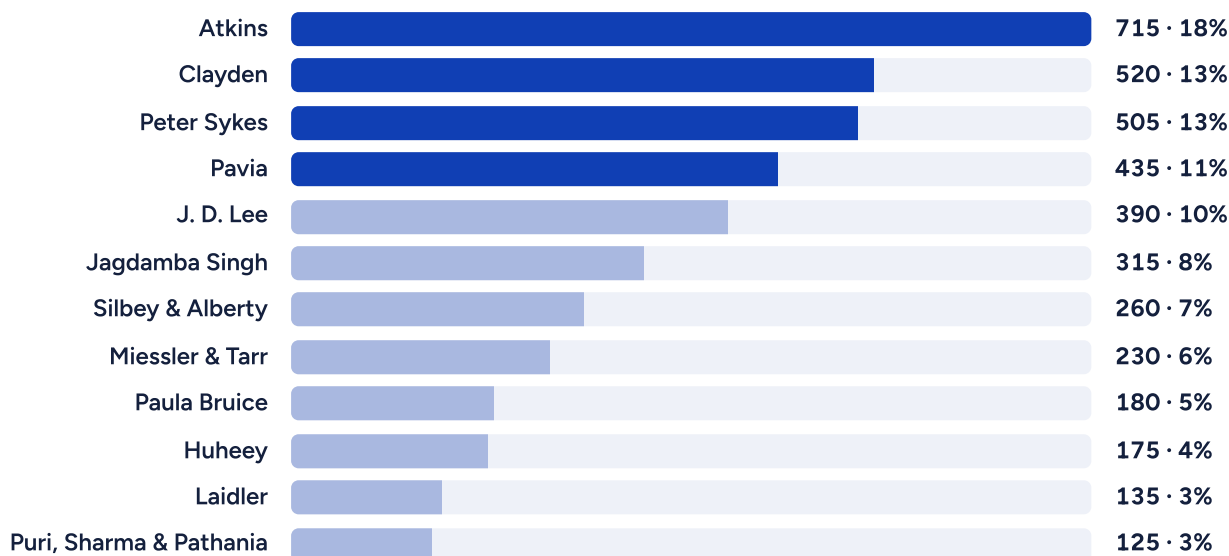
Unit	Best book: read only this	Add-on, only for	Fast lane	Marks
1 Delocalised covalent bonding	Clayden Aromaticity and anti-aromaticity, annulenes	PYQ notes: Azulenes, tropolones, fulvenes, sydnones: short notes from the PYQs	same	60
2 (i) Methods of studying mechanisms	Peter Sykes Kinetic and non-kinetic methods, isotopes, crossover, trapping, kinetic vs thermodynamic control	—	same	50
2 (ii) Reactive intermediates	Peter Sykes Carbocations, carbanions, radicals, carbenes, nitrenes, benzyne	—	same	100
2 (iii) Substitution (aliphatic and aromatic)	Peter Sykes S _N 1, S _N 2, S _N i, neighbouring group participation, aromatic substitution	—	same	100
2 (iii) Heterocycles	Clayden Pyrrole, furan, thiophene and indole: reactivity and orientation	—	Morrison & Boyd	70
2 (iv) Elimination reactions	Peter Sykes E1, E2, E1cb, Saytzeff vs Hofmann	Clayden: Pyrolytic syn eliminations: acetate, Chugaev, Cope	same	85
2 (v) Addition reactions	Peter Sykes Electrophilic addition to C=C and C≡C; nucleophilic addition to C=O, C≡N and enones	—	same	85
2 (vi) a Rearrangements	Peter Sykes Pinacol, Hofmann, Beckmann, Baeyer–Villiger, Favorskii, Fries, Claisen, Cope, Stevens, Wagner–Meerwein	—	same	85
2 (vi) b Condensations and named reactions	Clayden Enolate and carbonyl chemistry: aldol, Claisen, Dieckmann, Knoevenagel, Wittig and others	—	Morrison & Boyd	125
3 Pericyclic reactions	Jagdamba Singh Woodward–Hoffmann rules, electrocyclic, cycloaddition and sigmatropic reactions by FMO	Clayden: Pericyclic chapters, for the idea behind the rules	same	185
4 (i) Polymers	Paula Bruice Synthetic polymers: chain and step growth, PE, PS, PVC, Teflon, nylon, terylene, rubber	Puri, Sharma & Pathania: Molar mass averages of polymers	same	100
4 (ii) Biopolymers	Paula Bruice Amino acids, proteins, DNA and RNA	—	same	80
5 Synthetic uses of reagents	Clayden Oxidation and reduction chapters: OsO ₄ , HIO ₄ , CrO ₃ , Pb(OAc) ₄ , SeO ₂ , NBS, B ₂ H ₆ , Birch, LiAlH ₄ , NaBH ₄ , n-BuLi, mCPBA	—	same	265
6 Organic photochemistry	Jagdamba Singh Excited states, singlet and triplet, Norrish type I and II, photoreduction	—	same	130
7 (i–ii) Rotational and vibrational spectra	Atkins Molecular spectroscopy: rigid rotor, isotope effect, harmonic and anharmonic oscillator	—	Puri, Sharma & Pathania	40
7 (iii–v) UV, IR, NMR and mass spectra	Pavia UV and Woodward–Fieser, IR group frequencies, ¹ H NMR, mass spectra, combined problems	—	Y. R. Sharma	435

Marks = all CSE Chemistry PYQ parts of that unit, 2021–2025, including internal choices. Read the chapters by name: chapter numbers change between editions. Azulenes, tropolones, fulvenes and sydnones are not covered the way UPSC asks in any of these books; make short notes from the PYQs (solved PYQs on vkcsience.com).



Which books carry the marks

Every CSE Chemistry question of 2021–2025 (both papers, all parts asked, 3,985 marks in all) credited to the book recommended for its unit.



Four books, Atkins, Clayden, Sykes and Pavia, carry more than half. Spend reading time in that order of value, not in the order the books sit on your shelf.

The shelf: one job for each book

Atkins: quantum, gases, liquid surfaces, electrochemistry, photochemistry, surfaces, molecular spectra

Silbey & Alberty: thermodynamics, phase equilibria, partial molar quantities

Puri, Sharma & Pathania: solid state; short version of every physical unit

Laidler: kinetics, chain and fast reactions, H_2-Br_2

N. Awasthi: numerical practice only

J. D. Lee: bonding, main group, f-block

Huheey: crystal field, spectra, magnetism, bio-inorganic

Miessler & Tarr: reactions of complexes, organometallics

Peter Sykes: every mechanism unit of Paper II

Clayden: aromaticity, heterocycles, condensations, reagents

Jagdamba Singh & Jaya Singh: pericyclic reactions, organic photochemistry

Paula Bruice: polymers, biopolymers

Pavia: UV, IR, NMR, mass spectra in depth

Y. R. Sharma: the short version of spectroscopy

Morrison & Boyd: foundation; quick named reactions

Skoog: only amperometry and ion-selective electrodes

Vogel: not needed for CSE; keep it for IFoS or Geo-Scientist



05 Plan A: writing Mains in 2027

Prelims on 23 May 2027, Mains from 20 August 2027: about seven and ten months from the end of October, and GS needs its share. Rule: one short book per unit; the big books only for doubts.

Fast-lane shelf: 8 main books

- **Puri, Sharma & Pathania:** all physical units, incl. molecular spectra
- **J. D. Lee:** bonding, isomerism, main group, f-block
- **Huheey:** complexes, organometallics, bio-inorganic
- **Peter Sykes:** all mechanism units
- **Jagdamba Singh:** pericyclic and photochemistry
- **Y. R. Sharma:** UV, IR, NMR, mass
- **Paula Bruice:** polymers and biopolymers
- **Morrison & Boyd:** named reactions, heterocycles

Plus **N. Awasthi** for numericals and **Clayden** for only two areas: reagents and aromaticity.

Do not start these now

Atkins · Silbey & Alberty · Laidler · Miessler & Tarr · Pavia

Open one only when a PYQ makes no sense from your short book, and read only that section. After Mains, if you continue, these are your second reading.

PHASE 1 · NOW TO END OF FEBRUARY

One pass of every unit

Its fast-lane book plus its PYQs. Paper II in November and December (mechanisms, reagents, pericyclic, spectra carry the most marks). Paper I in January and February.

PHASE 2 · MARCH TO 23 MAY

Prelims first

Chemistry one hour a day: revise the one-page sheets and write one answer a day (VKC daily answer writing on Telegram).

PHASE 3 · 24 MAY TO 20 AUGUST

Tests and a second pass

A full-length test every week. Second pass of weak units only. The big book only for the topic where your answer was weak.



06 Plan B: still in college

Time is your advantage. Read the best books properly, and let your college syllabus do half the work.

STAGE 1 · B.SC. YEARS 1–2

Foundation

Morrison & Boyd, Puri, Sharma & Pathania, J. D. Lee. Get the basics firm.

STAGE 2 · B.SC. FINAL, M.SC. 1

Depth

The best book of each unit, as in the map: Atkins, Silbey & Alberty, Laidler, Clayden, Huheey, Miessler & Tarr, Pavia. Read the mapped chapters fully.

STAGE 3 · THE YEAR BEFORE YOUR ATTEMPT

The UPSC layer

Sykes, Jagdamba Singh and Y. R. Sharma for exam language. All PYQs solved. Three answers a week.

The semester trick

Same unit, same week. When college teaches thermodynamics, read the Silbey & Alberty chapter that week and solve the UPSC thermodynamics PYQs. College preparation and UPSC preparation become one job; by graduation, half the optional is done from the best books.

The 17 books, full titles

- **Atkins:** P. Atkins, J. de Paula, *Atkins' Physical Chemistry*
- **Silbey & Alberty:** R. J. Silbey, R. A. Alberty, M. G. Bawendi, *Physical Chemistry*
- **Puri, Sharma & Pathania:** Puri, Sharma and Pathania, *Principles of Physical Chemistry*
- **N. Awasthi:** N. Awasthi, *Problems in Physical Chemistry*
- **Laidler:** K. J. Laidler, *Chemical Kinetics*
- **Clayden:** Clayden, Greeves and Warren, *Organic Chemistry*
- **Pavia:** Pavia, Lampman, Kriz and Vyvyan, *Introduction to Spectroscopy*
- **Y. R. Sharma:** Y. R. Sharma, *Elementary Organic Spectroscopy*
- **Morrison & Boyd:** Morrison and Boyd, *Organic Chemistry*
- **Paula Bruice:** Paula Y. Bruice, *Organic Chemistry*
- **Peter Sykes:** Peter Sykes, *A Guidebook to Mechanism in Organic Chemistry*
- **Jagdamba Singh:** Jagdamba Singh and Jaya Singh, *Photochemistry and Pericyclic Reactions*
- **J. D. Lee:** J. D. Lee, *Concise Inorganic Chemistry*
- **Huheey:** Huheey, Keiter and Keiter, *Inorganic Chemistry*
- **Miessler & Tarr:** Miessler, Fischer and Tarr, *Inorganic Chemistry*
- **Vogel:** Vogel, *Textbook of Quantitative Chemical Analysis*
- **Skoog:** Skoog, West, Holler and Crouch, *Fundamentals of Analytical Chemistry*

Any edition from the last ten years is fine. Find chapters by name, not number.

Where to find everything

- Telegram: t.me/upsc_chemistry_vkc (this PDF, daily answer writing)
- vkcsience.com: solved CSE PYQs, notes, Mains test series
- YouTube: [@upsc_chemistry_vkc](https://www.youtube.com/@upsc_chemistry_vkc)

