School Connect Online

SCO INTERNATIONAL OLYMPIAD

CLASS 12 CHEMISTRY

SCO International Chemistry Olympiad

OFFICIAL SYLLABUS

Class 12 Chemistry Pathway

Designed from the attached SCO cover-page format and the Class 12 Chemistry Olympiad pathway.

- Aligned to physical, inorganic, organic, biomolecular, polymer and everyday chemistry learning.

Solutions	Electrochemistry	Kinetics	Coordination	Biomolecules
Solid State	p / d / f Blocks	Polymers	Everyday Chemistry	Achievers

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SCO International Chemistry Olympiad — Class 12 Official Syllabus

This syllabus is designed for senior-secondary learners preparing for the SCO International Chemistry Olympiad. It connects physical chemistry, inorganic chemistry, organic chemistry, biomolecules, materials and everyday chemistry with structured Olympiad-level reasoning.

Chapter-Wise Syllabus and Learning Outcomes

No.	Chapter	Core Scope	Enhanced Olympiad Learning Outcomes
1	**The Solid State**	Crystal lattices, unit cells, packing, density, point defects, electrical/magnetic properties	Interpret unit cell data, identify defects, and connect crystal structure to properties.
2	**Solutions**	Concentration units, Raoult law, colligative properties, van't Hoff factor	Solve solution-concentration and colligative-property problems using correct units.
3	**Electro Chemistry**	Galvanic/electrolytic cells, Nernst equation, conductance, batteries, corrosion	Predict cell emf, electrode roles, electrolysis products, and corrosion-prevention logic.
4	**Chemical Kinetics**	Rate law, order, integrated equations, half-life, Arrhenius equation, collision theory	Use kinetic data to determine order, rate constants, half-life, and temperature effect.
5	**Surface Chemistry**	Adsorption, catalysis, colloids, emulsions, coagulation	Explain adsorption models, catalyst action, colloidal stability, and practical applications.
6	**General Principles and Processes of Isolation of Elements**	Concentration, extraction, refining, electrolysis, thermodynamic principles	Choose extraction/refining methods based on ore type and metal reactivity.
7	**The p Block Elements**	Group 15–18 trends, oxoacids, interhalogens, noble gas compounds	Compare structures, bonding, acidity, oxidation states, and reactivity trends.
8	**The d and f Block**	Electronic configuration, variable oxidation states, lanthanoid contraction, important compounds	Explain colour, magnetism, catalytic behaviour, and f-block contraction effects.
9	**Coordination Compound**	Nomenclature, isomerism, bonding, CFT, applications	Name complexes, calculate oxidation states, predict geometry, isomerism, colour, and magnetic behaviour.
10	**Haloalkanes and Haloarens**	Nucleophilic substitution, elimination, stereochemistry, environmental effects	Differentiate SN1/SN2/E1/E2 patterns and predict major products.
11	**Alcohols, Phenols and Ethers**	Preparation, acidity, oxidation, substitution, named reactions	Compare acidity/reactivity and solve conversion-based organic problems.
12	**Aldehydes, Ketones and Carboxylic Acids**	Carbonyl reactivity, nucleophilic addition, oxidation/reduction, acidity	Identify tests, mechanisms, and synthetic conversions for carbonyl compounds.

No.	Chapter	Core Scope	Enhanced Olympiad Learning Outcomes
13	**Amines**	Basicity, preparation, diazonium salts, reactions and applications	Compare basic strength and use amines/diazonium salts in synthesis.
14	**Biomolecules**	Carbohydrates, proteins, nucleic acids, vitamins, enzymes	Connect biomolecular structure to biological function and deficiency disorders.
15	**Polymers**	Addition/condensation polymers, copolymers, biodegradable polymers	Classify polymers, identify monomers, and evaluate material properties.
16	**Chemistry in Every Day Life**	Medicines, food additives, cleansing agents, green chemistry awareness	Apply chemistry to health, hygiene, consumer products, and safe material use.

Suggested Question-Paper Blueprint

Section	Area	Questions	Purpose
Section A	General Chemistry	30	Concepts, numerical reasoning, reactions, structure and applications
Section B	Assertion–Reason	10	Scientific reasoning and explanation matching
Section C	Case Studies	5	Data/passage-based applied chemistry
Section D	Achievers	5	Higher-order Olympiad challenges

Preparation Roadmap

- Build formula fluency: molarity, colligative properties, Nernst equation, first-order kinetics and Faraday's laws.
- Revise named reactions and mechanisms with product prediction rather than rote memorization.
- Use diagrams for cell representation, crystal defects, adsorption, coordination geometry and organic reaction pathways.
- Practise assertion–reason and case-based questions to strengthen evidence-based scientific explanation.
- Review safety and sustainability contexts such as medicines, polymers, food additives, corrosion, green chemistry and electrochemical energy.