CSCA Chemistry Examination Syllabus

(2025 Edition)

I. Examination Purpose

This examination aims to assess the core chemistry competencies required for international students to pursue undergraduate studies in science and engineering programs in China.

It assesses students' mastery of the fundamental chemical knowledge system, understanding of scientific thinking, and ability to conduct experimental inquiry. These core competencies form the foundation of university-level chemistry courses, provide essential support for disciplines such as chemistry, chemical engineering, materials science, and environmental engineering, and lay a solid foundation for students' future research, innovation, and engineering practice.

II. Examination Format and Structure

1. Duration: 60 minutes

2. Total Score: 100 points

3. Language: Chinese or English

4. Question Type: Multiple Choice (Single Answer)

5. Number of Questions: 48

6. Content Modules:

- Basic Chemical Concepts and Calculations
- Properties and Reactions of Substances
- Chemical Theories and Laws
- Chemical Experiments and Applications

III. Examination Content and Scope

1. Basic Chemical Concepts and Calculations

- Classification and state changes of matter
- Chemical notation and equation writing
- Solution concentration and pH calculations
- Calculations involving the amount of substance
- Application of the ideal gas law

2. Properties and Reactions of Substances

- Properties of common inorganic substances (elements, oxides, acids, bases, and salts)
- Basic organic compounds (hydrocarbons and their derivatives)

- Identification of redox reactions
- Ionic reactions and testing methods

3. Chemical Theories and Laws
- Atomic structure and periodic law
- Chemical bonds and intermolecular forces
- Reaction rate and chemical equilibrium
- Theories of electrolyte solutions

4. Chemical Experiments and Applications
- Laboratory safety and use of apparatus
- Preparation and identification of common gases
- Methods for separation and purification of substances
- Analysis of industrial chemical processes (e.g., ammonia synthesis)