PROMULGATION OF SYLLABI OF THE SUBJECTS IN CHEMISTRY LICENSURE EXAMINATION

PRC BOARD OF CHEMISTRY RESOLUTION NO. 08, s. 1994, September 13, 1994

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WHEREAS, Sec. 15, Art. II of R.A. No. 382, "An Act Regulating the Practice of Chemistry in the Philippines", states the subjects in the examination;

WHEREAS, the Professional Regulation Commission (PRC) issued Memo Cir. No. 08, Series of 1992; Memo. Cir. No. 93-03, Series of 1993; and Memo Cir. No. 94-01, Series of 1994, directing the Professional Regulatory Boards to prescribe and adopt a syllabus for every subject in the licensure examination;

WHEREAS, every syllabus of an examination subject containing the concepts/topics with the corresponding level of knowledge or proficiency shall be the basis for the questions that will be inputted into the question bank for computerization; and,

WHEREAS a syllabus for a subject will not bring about overlapping of subjects and will accordingly guide the Board Member, the examinee, and the reviewer,

NOW, THEREFORE, by virtue of its quasi-legislative (rule-making) power under R.A. No. 4209, the Board hereby RESOLVED, as it now so RESOLVES, to formulate, prescribe, adopt, and promulgate the syllabi of the subjects in the Chemistry licensure examination (Annex "A").

FURTHER, RESOLVED, that this Resolution, upon its approval by the Commission, shall be effective after fifteen (15) days following its publication in the Official Gazette or any newspaper of general circulation, whichever is earlier.

FINALLY, RESOLVED, that this resolution shall be widely disseminated and circularized to all colleges/schools offering the course of Chemistry.

Adopted: 13 Sept. 1994

(SGD.) JOSE O. JULIANO
Chairman

(SGD.) ALUMANDA M. DELA ROSA
Member

(SGD.) CORAZON C. BERNIDO
Member

Approved:

(SGD.) HERMOGENES P. POBRE

Commissioner

(SGD.) MARIANO A. MENDIETA
Associate Commissioner

(SGD.) ARMANDO C. PASCUAL
Associate Commissioner

1.0
Inorganic Chemistry

1.1 Atomic Structure; Periodicity

1.2 Chemical Equations; Stoichiometry

1.3 Chemical Compounds

1.4 Chemical Bonding

1.4.1 Ionic Bond
1.4.2 Covalent Bond
1.4.3 Metallic Bond

1.5 Molecular Geometry; Molecular Orbitals

1.6 Gaseous State

1.7 Liquids and Solids

1.8 Chemical Behavior or Hydrogen, Oxygen and Water

1.9 Solutions; Electrolytes and Nonelectrolytes

1.10 Acids and Bases

1.11 Properties of Solutions; Colloidal State

1.12 Themochemistry; Thermodynamics

1.13 Chemical Kinetics

1.14 Chemical Equilibria

1.15 Ionic Equilibria I: Solutions of Acids and Bases

1.16 Ionic Equilibria II: Solubility and Solubility Product

1.17 Ionic Equilibria III: Redox and Electrochemistry

1.18 Nuclear Chemistry

1.19 Atomic and Molecular Spectroscopy

1.20 Metals I: Properties and Production

1.21 Metals II: Transition Metals

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1.22 Halogens and Noble Gases

1.23 Sulfur Family and Nitrogen Family

1.24 Carbon, Silicon and Boron

1.25 Metals and Metallurgy

1.25 Complex Ions and Coordination Compounds

2.0
Analytical Chemistry

2.1 Basic Principles

2.2 Neutralization Titration Curves

2.3 Acidimetry and Alkalimetry

2.4 Oxidation-Reduction Processes

2.5 Redox Titrations

- 2.5.1 Permanganate Process
- 2.5.2 Dichromate and Ceric Processes
- 2.5.3 Iodiometry and Related Methods

2.6 Precipitation Methods

2.7 Complex Formation Methods

2.8 Gravimetric Analysis

2.9 Solvent Extraction

2.10 Chromatographic Methods

2.11 Instrumental Methods

- 2.11.1 Electrometric Methods (Polarography, Potentiometry, Electro-deposition)
- 2.11.2 Spectrophotometry (IR, UV, Fluorescence)
- 2.11.3 Gas Chromatographic Methods
- 2.11.4 Atomic Spectrometry (Emission Spectrometry, AAS)
- 2.11.5 Nuclear and Related Techniques (XRF, NAA)

2.12 Miscellaneous Techniques

- 2.12.1 NMR
- 2.12.2 Mass Spectrometry
- 2.12.3 Polarimetry
- 2.12.4 Refractometry

2.12.5 Turbidimetry

3.0
Organic Chemistry

3.1 Structure and Properties of Organic Compounds

3.1.1 Atomic structure (atomic orbitals, molecular orbitals, hybrid bond orbitals

3.1.2 Character of a covalent bond (polarity, bond length, bond energy, bond angle, restricted rotation)

3.1.3 Bonding in carbon and hybridization

3.1.4 Structural effects (pi-electron delocalization, hyperconjugation, inductive effects, steric effects, H-bonding, van delr Waals forces)

3.1.5 Acidity and basicity

3.1.6 Functional groups and types of organic compounds

3.2 Alkanes

3.2.1 Structure and nomenclature

3.2.2 Reactions of alkanes (energy of activation, free radical substitution)

3.2.3 Stereoisomerism

3.3 Alkenes

3.3.1 Structure and nomenclature

3.3.2 Reactions of alkenes (elimination, electrophilic and free radical addition, cleavage)

3.4 Alkynes and Dienes

3.4.1 Structure and nomenclature

3.4.2 Reactions of alkynes

3.4.3 Polyalkenes and hyper-conjugation

3.5 Aromatic Compounds

3.5.1 Properties of benzene and the aromatic character

3.5.2 Reactions of benzene and electrophilic aromatic substitution

3.5.3 Nomenclature and reactions of other aromatic compounds

3.6 Organic Halides (alkyl and aryl halides)

3.6.1 Structure and nomenclature

3.6.2 Reactions (nucleophilic aliphatic substitution, elimination, nucleophilic aromatic substitution)

3.7 Alcohols and Phenols

3.7.1 Structure and nomenclature

3.7.2 Reactions of the hydroxyl group

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3.8 Ethers and Epoxides

3.8.1 Structure and nomenclature

3.8.2 Reactions

3.9 Carboxylic Acids

3.9.1 Structure and nomenclature

3.9.2 Reactions of carboxylic acids

3.10 Aldehydes and Ketones

3.10.1 Structure and nomenclature

3.10.2 Chemical properties and reactions (nucleophilic addition)

3.11 Acid Chlorides, Anhydrides, and Amides

3.11.1 Structure and nomenclature

3.11.2 Chemical properties and reactions

3.12 Esters

3.12.1 Structure and nomenclature

3.12.2 Chemical Reactions

3.13 Other Organic Compounds

3.14 Polymers

3.15 Biomolecules

3.15.1 Fats

3.15.2 Carbohydrates

3.15.3 Proteins

3.15.4 DNA and RNA

3.15.5 Biochemical processes

3.16 Identification of Organic Compounds

3.16.1 Analysis of elements

3.16.2 Classification test

3.16.3 Preparation of derivatives

3.16.4 Isotope techniques

3.16.5 Spectroscopy

4.0
Physical Chemistry

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4.1 Gases

4.2 First Law of Thermodynamics and Applications

4.3 Liquids

4.4 The Solid State

4.5 Solutions; Colligative Properties of Solutions

4.6 Surface Chemistry and Colloids

4.7 Thermochemistry

4.8 Second and Third Laws of Thermodynamics

4.9 Free Energy

4.10 Homogeneous and Heterogeneous Equilibria; Ionic Equilibria

4.11 Phase Equilibria

4.12 Electrolytic Transference and Conductance

4.13 Electromotive Force of Cells; Electrolysis and Polarization

4.14 Kinetics of Homogeneous and Heterogeneous Reactions

4.15 Atomic Structure and Nuclear Chemistry; Molecular Structure

4.16 Photochemistry

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