Bridging Exemption Test (BET) Exam Course: Chemistry

Overview

This course introduces the fundamental and basic concepts in chemistry. It emphasize the theories and principles of atoms and also those related to topics in physical chemistry as well that can be applied into the study of the field in engineering.

Faculty/Programme Group

- Civil
- Electrical
- Chemical & Natural Resources
- Biomedical & Health Science
- Mechanical
- Bioscience & Bioengineering
- Science
- Education
- Computer Science and Information System
- Geomatic Science & Engineering (SGS, SGU, SGG)

Topics

Fundamentals of Chemistry and Principles of Stoichiometry
Units & measurements, Atoms and Molecules, Moles concept, Reaction Stoichiometry, Concentration of solution.

Electronic Structure of Atoms
The Bohr atomic model, Introduction to Quantum mechanical model, Electronic configuration.

Periodic Table of Elements
Classification of the elements, Periodicity.

Chemical Bonding
Lewis structure, Intermolecular forces, Metallic bonding, VSEPR, VBT.

States of Matter
Properties of gas, Properties of liquid, Single component system.

Thermochemistry
Concepts of enthalpy, Hess's Law, Born-Haber cycle.

Chemical Kinetics
Reaction rate, Collision theory and transition state theory, Factors affecting reaction rate.

Chemical Equilibrium
Dynamic equilibrium, Equilibrium constant, Le Chatelier's principle.

Acids and Bases

Definitions, Salt and hydrolysis, Buffer solution, Acid & Base titration, Solubility equilibria.

Electrochemistry
Redox reaction, Balancing redox reaction, Nernst equation, Concentration cell, Electrolytic cell, Electrolysis.

Organic Chemistry
IUPAC nomenclature of alkane, alkene, alkyne, aromatic, alcohol, amine, carbonyl compounds

Exam Details

Format :
Subjective with total of 50 marks (equivalent to 100%)
All calculation and justification must be shown clearly.

Duration
2 hours (no breaks)

References

1. Chemical Principles, 5th Ed. ,Zumdahl S.S Houghton Mifflin Company, 2005.
2. Introduction to Chemical Principles 8th Ed., Stoker H.S, Pearson Prentice Hall, 2005.
3. Chemistry, 3rd Ed.. Mc Murry and Fay R.C, Prentice Hall, 2001.
4. Chemical Principles, 6th Ed., Masterton W.L, Slowinski E.J. and Stanitski C.L, Saunders College Publishing, 1985.
5. Chemistry, 8th Ed., Chang R. Mc. Grow Hill, 2005

Textbook : Chemistry, 10th Ed., Chang R. Mc. Grow Hill, 2010