

C I R C U L A R

Below is the syllabus assigned for the first year students for the subject: Applied Chemistry (CY 104 S1) Mid-Semester Examination:

- **WATER**

Structure of water, physical and chemical properties, Hydrogen bonding, Specifications for water in industries, types of water (raw water, cooling water, boiler water, nuclear water), Hardness of water, Estimation and units of Hardness, Boiler feed water, Boiler Problems - Scales & Sludge, Priming, Foaming, Carryover, Caustic Embrittlement, Boiler corrosion, Desalination. Water softening (lime-soda, zeolite and ion-exchange) methods.

- **POLYMERS**

Introduction of Polymers: Classification of polymers, nomenclature, functionality in polymers, number and weight average molecular weight, molecular weight distribution (PDI), Chain Architecture (Linear/Branched, Tacticity, Isomerism), homopolymers, copolymers, graft copolymers and their characteristic properties in reference to their applications. Types of polymerization: addition, condensation, chain growth and step growth. Polymerization techniques: bulk, suspension and emulsion polymerization. Moulding constituents of Polymer, Moulding (Injection, Extrusion and Compressing) methods.

- **CHEMISTRY OF MATERIALS**

Alloys: Introduction, Necessity of making alloys, classification, Metal-Metal alloy: Brass (properties and applications), Metal-Non-metal alloy: Steel (properties), Composites: Introduction, classification, particulate composites, structural composites (Laminar and Sandwich), Advantages and applications of Composites, Nanomaterials – properties synthesis (sol-gel) and applications, Basics of Green Chemistry.

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