Engineering Chemistry-II
[KAS 202T]

L	T	P			Theory		Sessional		Total(s)	75
02	**01**	**0**			**50**		**25**		**Credit's: 02**	

Course Outcomes (Cos):

After the completion of the course, students are expected to have the ability to:

1. *Students will learn the fundamentals of solid materials, X-ray analysis, and nanomaterials, and their diverse applications.*
2. *Apply basic science knowledge and fundamental aspects of cell functioning, equations in addressing electrochemistry problems, and corrosion control approaches.*
3. *To gain a fundamental understanding of spectrochemical techniques for the identification and structural elucidation of simple organic compounds.*
4. *To demonstrate an understanding of polymeric material and Grignard synthesis, which is needed for engineering applications.*
5. *Apply basic knowledge of fuels and techniques in the determination of fuel efficiency.*

Unit I: **State of Matter** **[08]**

Elementary ideas of solid stats, Band theory of solid, Unit cell (Cubic system) point defects in solid, Techniques for structure determination of solid material (i.e., Braggs Equation), Structure and application of Graphite & Fullerenes, Nanomaterial's, and application in drug delivery.

Unit II: **Electrochemistry and Corrosion** **[08]**

Nernst Equation and application, Relation of EMF with thermodynamic function (ΔH, ΔF, and ΔS), Lead Storage Battery.
Corrosion, cause, effect, and prevention.

Unit III: **Spectroscopic Techniques** **[08]**

Elementary ideas of Lambert & Beer Laws, Principle and application of UV, IR, and Visible Spectroscopy.

Unit IV: **Polymers & Organometallics** **[08]**

Polymer; Basic concepts & Classification of polymers, biodegradable polymers. Preparation and application of some industrially important polymers (Buna S, Buna-N, Neoprene, Nylon-6, Nylon-6,6, and Terylene). General methods of synthesis of Organometallic compounds (Grignard reagent) and their applications.

UNIT V: **Fuels** **[08]**

Classification of Fuels, Calorific value of Fuels, Net calorific value, Gross Calorific Value, and Determination of Calorific Value (using Bomb Calorimeter), Analysis of Coals.

Reference Book:

1. University Chemistry by B.H. Mahan
2. University Chemistry by C.N. R. Rao
3. Organic Chemistry by I.L Finar
4. Physical chemistry by S. Glasstone
5. Engineering Chemistry by S.S Dara
6. Polymer Chemistry by W.Billmeyer
7. Engineering Chemistry by Satya Prakash