



ANNEXURE-I

B.Tech. Ist/IInd Semester [Branch:CSE,ECE,EE]

Course Name: Engineering Chemistry-I Course Code: CY11101 L:T:P : 2:1:2 Credit: 04

- 1. Chemical Kinetics:** Rate of a chemical reaction, factors affecting the rate of reactions: concentration, temperature, pressure and catalyst; determination of order of reaction, elementary and complex reactions, order and molecularity of reactions, rate law, rate constant and its units. [6]
- 2. Electrochemistry:** Electrolysis, Nernst Equation, Electrochemical cells and EMF, Applications of EMF, Rechargeable battery, solar cells, Fuel cells, Dye sensitized solar cells. [6]
- 3. Organic and Polymer Molecules:** Organic optoelectronic molecules & devices, chemical sensors, memory cells, electro chromic devices and non-linear optics. Conducting polymers, Thermo sensitive polymers, liquid crystalline polymers, piezoelectric polymers, polymers for optical data storage, fibre-optics. [8]
- 4. Chemistry, properties and applications**
 - Atomic and Molecular Orbitals
 - Schrodinger equation and applications
 - Band Theory: Semiconductors, insulators, doping in semiconducting materials
 - Organic light-emitting devices
 - Character Tables- their applications in spectroscopic software.
 - Printed Circuit Boards [8]

Practical: List of Experiments

1. Kinetic study of hydrolysis of ethyl acetate by volumetric titration method.
2. Verification of Kohlrausch's 1st law for strong electrolytes using conductometric measurement.
3. Verification of Ostwald's dilution law for weak electrolytes using conductometric measurement.
4. Determination of the strength of a strong acid by strong base using conductometric titration.
5. Preparation of Daniell Cell and its related study.
6. Preparation of derivatives of the functional groups.
 - (a) Preparation of acetanilide from aniline (Acetylation) and its spectroscopic characterisation.
 - (b) Preparation of p-nitro acetanilide from acetanilide (Nitration)

7. Determination of Turbidity of given samples by Digital Turbiditymeter/Nephelometer.

Text Books:

1. *Engineering Chemistry*, Jain & Jain, DhanpatRai Publishing Co., New Delhi.
2. *Engineering Chemistry*, ShashiChawla, DhanpatRai Publishing Co., New Delhi.

Reference Books:

1. *Engineering Chemistry- A Textbook*, Harish Kumar Chopra, AnupamaParmar, Narora, New Delhi.
2. *Elements of Physical Chemistry*, Peter Atkins, Julio D. Paula, Oxford, UK.
3. *Introduction to Organic Electronic and Optoelectronic Materials and Devices*, Sam-Shajing Sun, Larrq R. Dalton, CRC Press.
4. *Polymer Science*, V R Gowariker, N V Viswanathan, JayadevSreedhar, New Age International Private Limited, New Delhi.
5. *Inorganic Chemistry: Principles of Structure and Reactivity*, By James E. Huheey, Ellen A. Keiter, Richard L. Keiter, Okhil K. Medhi, Pearson.
6. *Chemical Applications of Group Theory*, F. Albert Cotton, Wiley, New Jersey.
7. *Online Resources*.