PAPER CODE:1SC2030313	TITLE OF PAPER: ANALYTICAL CHEMISTRY -III

Course Objective: To impart knowledge and training in chemistry at advanced level, make aware with recent analytical technique, DNA binding & DNA cleavage study we can measure by using electrophoresis technique. Oxidation & Reduction reactions occur in many chemical systems. In the different reactions involve the transfer of electrons from one chemical species to another. Because "electrons" are involved in all these reactions, these changes are described as electrochemical changes. pH & conductance we can measured by various industries.

Teaching scheme (hours) per week		Credit		Theory Marks		Practical Marks		Total
Theory	Practical	Theory	Practical	University Assessment	Cont. Assessment	University Assessment	Cont. Assessment	
4	-	4	-	60	40	-	-	100

UNIT	DISCRIPTION IN DETAIL	WEIGHTAGE
I	**Electrophoresis** Principles of electrophoresis, theory and applications of Poly-acrylamide gel electrophoresis, micelles capillary zone electrophoresis, electrokinetic electrophoresis, Iso-electric focusing. Efficiency and resolution. Applications of Electrophoresis.	25%
II	**Electro analytical Measurements** Voltage, Impedance, The electric double layer, Electro capillarity. Current, Diffusion transport.	25%
III	**Electrodeposition and Coulometry** Electrolysis, Current-Voltage relation, Electrogravimetric analysis at constant current, constant potential and at controlled potential. Coulometric analysis.	25%
IV	**Instrumental analysis** pH metry (Principle of instrumentation and mechanism of pH by glass electrode), Potentiometry, Conductometry and types of electrodes and explanation of the nature of titration curves	25%

LEARNING OUTCOMES

- DNA binding & DNA cleavage study we can measure by using electrophoresis technique.
- pH & conductance we can measured by various industries
- Define: anode, cathode, oxidation, reduction.
- Draw and identify the basic components of an electrolytic cell.
- Define electrode selectivity and describe what makes it possible.
- Describe indicator, reference & measuring electrodes.
- Students should updating the recent developments in the field of Electro analytical chemistry.

REFERENCE BOOKS:

1. "Analytical Chemistry" by Gary D. Christian, 6th Edition, John Wiley and Sons Inc. New Jersey.
2. Advances in Electrophoresis (Volume 2) by Andreas Chrembach, Michael J. Dunn, Bertold J. Radola, Wiley-VCH, 1989.
3. High Performance Capillary Electrophoresis: An Introduction by David N. Heiger. Hewlett Packard GmbH, 1992.
4. Laboratory Techniques in Electroanalytical byChemistry. Marcel Dekker Inc., New York
5. Electroanalytical Chemistry. John Wiley & Sons, New York by Basil H. Vassos, Galen W. Ewing
6. Principles of Instrumental Analysis" 6th ed. Thomson Brooks/Cole Publishing: Belmont, CA 2007.by Skoog, D.A.; Holler, F.J.; Crouch, S.R
7. Electrochemical Methods – Fundamentals and Applications", John Wiley & Sons, New York by Allen J. Bard, Larry R. Faulkner.