ENGINEERING CHEMISTRY LAB

Common for all branches

Course Code - Category: 117/127 **Credits:1.5**

L	**T**	**P**	**E**	**O**
0	**0**	**3**	**0**	**1**

Sessional Marks:50

End Exam: 3 Hours End Exam Marks:50

Course Objectives:

- To improve skills in analyzing samples through titration procedures
- To get an idea over instrumental methods of analysis for more accuracy

At the end of this course, the students will be able to	
CO1	Apply experimental skills in analysing samples through titration procedures
CO2	Select and use a suitable instrumental technique for the quantitative analysis for more accuracy

CO-PO-PSO Mapping **(Low-1, Medium-2, High-3)**

Pos	1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2
CO-1	2	1		1		1		1	1	1				
CO-2	2	1		1		1		1	1	1				

List of Experiments (any ten experiments)

1. i) Preperation of primary standard solution.
   ii) Preparation and Standardization of Hydrochloric acid solution.
2. Determination of total Hardness present in the given water sample.
3. Estimation of Iron(II) by permonganate.
4. Estimation of amount of calcium present in the Portland cement by titrimetrically.
5. Estimation of amount of Zinc by EDTA.
6. Estimation of amount of Copper by using Sodium thiosulphate.
7. Determine the strength of acid (lead acid battery) by titrating with strong base using **pH meter**.
8. Estimate the individual strength of acids present in the acid mixture by titrating with strong base using **conductivity meter.**

9. Estimate the amount of Mohr's salt present in the given solution by titrating with potassium dichromate using **potentiometer.**
10. To determine the viscosity of liquid by Ostwald viscometre
11. **Spectrophotometric** estimation of Fe(III) by Potassium thiocyanate.

Demo Experiments

1. Thin layer chromotography and Gas chromatography
2. Preperation of Bakelite
3. Particle size distribution by PSD analyser(Demo-Outsource)
4. Elemental analysis by ICPMS (Demo-Outsource)
5. Introduction of Reaction colourimetry (for Chemical Engineering)

Learning Outcomes:

1. Measure the strength of an acid present in secondary batteries
2. Calculate the hardness of water sample
3. Determine the Potential and conductance of solutions
4. Analyse the cement for Iron and Calcium contents
5. Prepare polymer materials

Prescribed Books

1. **S.K. Bhasin and SudhaRani** "*Laboratory manual on Engineering chemistry*" third edition; DhanpatRai Publishing Company.

Reference Books

1. **S.S. Dara "***Experiments and calculations in Engineering chemistry*" 9th edition; S. Chand & Company ltd.