

# Engineering Chemistry Lab

[As per Choice Based Credit System (CBCS) scheme]  
(Effective from the academic year 2018-19)

**Course Code: 18CHEL16/26**  
**No. of Hours/Week: 02**  
**Total Hours: 42**  
**Semester: I/II**

**CIE Marks: 40**  
**SEE Marks: 60**  
**Exams. Hours: 03**  
**Credits: 01(0:0:2)**

**Course objectives:** To provide students with practical knowledge of

- Quantitative analysis of materials by classical methods of analysis.
- Instrumental methods for developing experimental skills in building technical competence.

## Instrumental Experiments (Part A)

1. Potentiometric estimation of FAS using standard  $K_2Cr_2O_7$  solution.
2. Conductometric estimation of acid mixture.
3. Determination of Viscosity co-efficient of the given liquid using Ostwald's viscometer.
4. Colorimetric estimation of Copper.
5. Determination of pKa of the given weak acid using pH meter.
6. Flame photometric estimation of sodium and potassium.

## Volumetric Experiments (Part B)

1. Estimation of Total hardness of water by EDTA complexometric method.
2. Estimation of CaO in cement solution by rapid EDTA method.
3. Determination of percentage of Copper in brass using standard sodium thiosulphate solution.
4. Determination of COD of waste water.
5. Estimation of Iron in haematite ore solution using standard  $K_2Cr_2O_7$  solution by external indicator method.
6. Estimation of percentage of available chlorine in the given sample of bleaching powder (Iodometric method)

**Course outcomes:** On completion of this course, students will have the knowledge in,

CO1: Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results.

CO2: Carrying out different types of titrations for estimation of concerned in materials using comparatively more quantities of materials involved for good results.

### Conduction of Practical Examination:

1. Examination shall be conducted for 100 marks, later reduced to 60 marks.
2. All experiments are to be included for practical examination.
3. One instrumental and another volumetric experiment shall be set.
4. Different experiments shall be set under instrumental and a common experiment under volumetric.

### Reference Books:

1. G.H. Jeffery, J. Bassett, J. Mendham and R.C. Denney, "Vogel's Text Book of Quantitative Chemical Analysis"
2. O.P. Vermani & Narula, "Theory and Practice in Applied Chemistry", New Age International Publishers.
3. Gary D. Christian, "Analytical chemistry", 6<sup>th</sup> Edition, Wiley India.