

| 18BSC601P | | | | | Physical Chemistry Lab – I | | | | | |
|-----------------|---|---|---|----------|----------------------------|----|----|-----------|---------|-------------|
| Teaching Scheme | | | | | Examination Scheme | | | | | |
| L | T | P | C | Hrs/Week | Theory | | | Practical | | Total Marks |
| | | | | | MS | ES | IA | LW | LE/Viva | |
| 0 | 0 | 2 | 1 | 2 | | | | 50 | 50 | 100 |

COURSE OBJECTIVES

- To understand the working principle of pH meter, conductivity meter and potentiometer
- To learn titrimetric method for chemical analysis
- To learn the basic concepts of buffer solution and pKa
- To understand the basic concepts adsorption and chemical kinetics.
- To know the significance of analytical chemistry in qualitative and quantitative analysis

LIST OF EXPERIMENTS

1. Determine experimentally the partition coefficient of I₂ in CCl₄ and water.
2. Determine solubility of benzoic acid at different temperatures and calculate ΔH of dissolution.
3. To determine the composition of mixture of acids by Conductometrically.
4. Determination of pKa values of orthophosphoric acid using pH meter.
5. Determination of rate constant of decomposition of Hydrogen peroxide by acidified potassium iodide.
6. Investigation of the reaction between Acetone and Iodine.
7. Volumetric analysis of given sample of brass alloy.
8. To estimate amount of ferrous ion present in the solution by K₂Cr₂O₇.
9. Determination of pH of a buffer solution by colour matching of indicator.
10. Determination of the concentration of Iodide, Bromide and chloride in the mixture by potentiometric titration with AgNO₃.
11. Potentiometric titration of a standard solution of KCl against AgNO₃ solution.
12. To study the adsorption of acetic acid on charcoal and to verify Freundlich isotherm.
13. Study of chemical kinetics of Methyl acetate ester (acid) hydrolysis.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1– Understand the use of different instrumental techniques such as pH, conductivity & potentiometers.

CO2– Interpret the results obtained from the instrumental techniques.

CO3– Conceptualize the analytical methods for chemical applications.

CO4– Analyse the interaction of materials present in ionic medium.

CO5– Analyse and demonstrate the applications of analytical tools in chemical industry.

CO6– Elucidate the ionic behaviour of different solutions with the knowledge of physico-analytical methods.

TEXT/REFERENCE BOOKS

1. Practicals in Physical Chemistry, P S Sindhu, Macmillan, 2005.
2. Experiments in Physical Chemistry 2nd Edition, J. M. Wilson, R. J. Newcombe, A. R. Denaro, Pergamon Press.

SEMESTER EXAMINATION PATTERN

Max. Marks: 100

LW(Daily lab performance plus journal)

LE (Viva-voce plus Lab examination)

Exam Duration: 3 Hrs

50 Marks

50 Marks