

CHN-605-(P) Physical Chemistry
Practicals
Section – I Minimum 04

1. Investigate the complex ion formation between Fe(III) and thiocyanate ion by job's method (Colorimeter)
 - (i) Determine free energy
 - (ii) Determine equilibrium constant
2. Determine the composition of the following binary mixtures by using spectrophotometer or Colourimeter (Additiv rules)
 - (i) $\text{CoCl}_2, 2\text{H}_2\text{O} + \text{NiCl}_2, 6\text{H}_2\text{O}$
 - (ii) Crystal violet + Aurine
 - (iii) $\text{K}_2\text{Cr}_2\text{O}_7 + \text{KMnO}_4$
3. Spectrophotometric determination of lead on leaves using solvent extraction.
4. Determination inorganic phosphorus in human urine or serum Spectrophotometrically.
5. Spectrophotometric titration of copper and Bismuth mixture by EDTA.
6. Separation of dyes TLC

Malachite green	Alizarin
Crystal violet	Methyl orange
Cresol Red	Congo Red
Fast green	Sunset yellow
Rhodamine B	Pera Red
7. Separation of inorganic icons :
 $\text{Co}^{+2}, \text{Ni}^{+2}, \text{Zn}^{+2}, \text{Fe}^{+2}, \text{Mn}^{+2}, \text{Mo}^{+3}, \text{Cl}, \text{Br}, \text{I}$ by TLC / Paper chromatography.
8. Separation of mixture of methylene blue and fluorescein on alumina column.

Section II Minimum 04

1. Determine the equivalent conductance of a strong electrolyte at several dilutions and hence verify the Onsager equation.
2. Titration of KI solution against HgCl_2 solution conductometrically.
3. Polarographic determination of $\text{Pb}_2^+, \text{Cd}_2^+$ or Cu_2^+ ions.
4. Determine molar reflection of methyl acetate, ethyl acetate, n-hexane & CCl_4 . Calculate the atomic reflections of C, H, & Cl atoms.
5. To Study the influence of ionic strength on solubility of CaSO_4 .
6. To determine the iso electric point of glycine by pH metric.
7. Determine the standard electrode potential of Ag/Cu/Pb/Zn.
8. Fluorimetric determination of $\text{Al}^{3+}, \text{Cd}^{3+}, \text{Ca}^{2+}$ or Zn^{2+}
9. Estimate Na^+ or K^+ ion by flame photometer.

Section – III Minimum 04

1. Investigate the reaction between iodine and acetone.
2. Determine the formula of Ag-NH₃ complex by potentiometric method and instability constant.
3. Photo catalytic degradation of nitro aniline (-O/-m-p) using ZnO/TiO₂ as semiconductor.
4. Photo electrochemical degradation of picric acid and or (-O/-m-p nitro phenol)
5. Determine formula of complex formed between cupric ion & NH₃ by distribution method.
6. Determine the radius of molecule of sucrose by viscosity measurements.
7. Study the variation of viscosity with composition of mixture of
 - (i) Ethanol – water
 - (ii) Methanol – ethylene diamineDetermine whether there is complex compound formation between two layers.
8. Investigate solubility of component system & hence draw a tie line on binodal.
9. Separation of amino acids/proteins by electrophoresis.