

CHN-705-(O) Practicals Physical Chemistry

Section – I

Minimum 04

1. To study the complex formation between Fe(III) and salicylic acid and find instability constant and free energy change by spectrophotometer.
2. Simultaneous spectrophotometric determination of Cr^{6+} & Mn^{7+} or As^{2+} & Sb^{3+} .
3. Determine the dissociation constant of indicator (Methyl red, O-nitrophenol, Phenolphthalein) by spectrophotometer.
4. Ultraviolet spectrophotometric determination of Aspirin, phenacetin and in APC table using solvent extraction.
5. Separation of analgesic Drugs by TLC.

Phenyl butazone	Caffeine
Aspirin	Phenacetin
Phenazone	Paracetamol
Dipyrene	Amido Pyrine
6. Separation of amino acid by TLC
Lycine, Valine, Glutamic acid.
7. To determine the capacity of anion / cation exchange resin by column method.
8. Gas chromatographic analysis of Tertiary mixture of Pentane, Hexane & Heptane.
9. Estimation of insecticides in water using HPLC.

Section – II

Minimum 04

1. Determine effect of Cl^- , Br^- or I^- ions on alkaline hydrolytic constant of n-butyl acetate conductometrically.
2. Determine adiabatic compressibility and intermolecular free length for interaction between DMSO & acetone for binary mixtures.
3. Determine ultrasound velocity for addition of NH_4Cl solution in water and acetone binary mixture at room temperature.
4. Investigate autocatalytic reaction between oxalic acid & potassium permanganate.
5. Study the kinetics of oxidation of propanol using an oxidant.
6. Determine mol. Wt of polymer by viscosity measurement/turbidity measurement.

7. Determine apparent mol. Wt of an electrolyte (KCl) in water & hence degree of dissociation (cryoscopic method).
8. Investigate effect of substitution of chloride ions on rate constant of inversion of cane sugar by using mono, di, & trichloro acetic acid as catalyst (polarimetry).
9. Determine the heat capacity of the calorimeter & concentration of unknown solution of benzoic acid by measuring heat changes during dilution.

Section III

Minimum 04

1. Determine the heat of solution of a solid compound (CaCl_2 , MgCl_2 or Synthesized / schiff's base) and also lattice energy of CaCl_2 using Bron-Haber cycle.
2. Study effect of ionic strength on activity coefficient and mean activity coefficient of silver ion in 0.01M silver nitrate solution (potentiometry)
3. Determine solubility of Ag_2CrO_4 potentiometry.
4. Amperometric titration for lead in solution with potassium dichromate.
5. Use of computer software to calculation thermodynamic properties of some compounds.
6. Use a computer program to determine buffer capacity & pH of any solution.
7. To determine the equivalent conductance of a weak electrolyte at infinite dilution using the khohlrauch law.
8. Discuss the primary salt effect in a reaction between $\text{K}_2\text{S}_2\text{O}_8$ and KI.