

BACHELOR OF SCIENCE in CHEMISTRY (HONS)
SEMESTER – V

INORGANIC AND PHYSICAL CHEMISTRY PRACTICAL
Paper Code: CH- 508P

CH- 508P INORGANIC AND PHYSICAL CHEMISTRY PRACTICAL

PRACTICAL: 100 Marks
(Inorganic: 67 marks; Physical: 33 marks)
145 Hours

Inorganic Laboratory:

- I. Preparation of Inorganic complexes
a. Preparation of sodium tris(oxalate)ferrate(III)
b. Preparation of Nickel Dimethylglyoxime, $[\text{Ni}(\text{DMG})_2]$
c. Preparation of copper tetraamine complex, $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$
d. Preparation of cis and trans-bis(oxalate)diaqua chromate
- II. Estimation of two constituents from a binary mixture (one volumetrically and one gravimetrically) Estimation of the constituents from the following mixture: Iron and calcium, iron and copper, iron and manganese, copper and zinc, silver and copper, calcium and barium, calcium and lead, calcium and magnesium, copper and chloride, copper and sulphate.
- III. Semimicro analysis Semimicro analysis of five radicals containing at least one rare element (V, Mo, W, etc.) Silver, lead, mercury, bismuth, copper, cadmium, arsenic, manganese, cobalt, aluminium, iron, nickel, calcium, strontium, barium, magnesium, sodium, potassium, ammonium, chloride, bromide, iodide, fluoride, sulphate, sulphite, thiosulphate, chromate, phosphate, nitrate, nitrite, borate, arsenite and arsenate.

Physical Laboratory:

- (I) Study of equilibrium of the following reactions by the distribution method:
 - (i) I_2 in water –Kerosene/ CCl_4
 - (ii) $\text{I}_2(\text{aq}) + \text{I}^- \rightarrow \text{I}_3^-(\text{aq})$
 - (iii) $\text{Cu}^{2+}(\text{aq}) + n\text{NH}_3 \rightarrow \text{Cu}(\text{NH}_3)_n^{2+}$
- (II) Perform the following potentiometric /pH- metric titrations:
 - (i). Strong acid with strong base
 - (ii) weak acid with strong base and
 - (iii) dibasic acid with strong base
- (III) Potentiometric /pH- metric titrations of Mohr's salt with potassium dichromate.
- IV. Determination of critical solution temperature and composition of the phenol-water system and to study the effect of impurities on it.
- V. Phase equilibria: Construction of the phase diagram of (i) simple eutectic and (ii) congruently melting systems, using cooling curves and ignition tube methods.

Any other experiment carried out in the class.