

MANGALORE UNIVERSITY
DEPARTMENT OF CHEMISTRY
M.Sc. CHEMISTRY

CH P 507: INORGANIC CHEMISTRY PRACTICALS – III

COURSE OUTCOME:

- The students will have hands on experience in the Analysis of Brass, Cu-Ni alloy, Stainless Steel,
- Type Metal and quantitative analysis of the constituents & mixtures containing the following radicals Fe^+ Ni, Fe^+ Ca, Cr^+ Fe.
- This course also trains the students in Separation and determination of Mg^{2+} / Zn^{2+} , Zn^{2+} / Cd^{2+} by Ion-Exchange Chromatography in Part A and in Part B
- Determination of COD, Phosphorus, DO, Nitrate, Alkalinity of Water.

A. Any five of the following experiments are to be carried out:

1. Analysis of brass-Cugravimetrically using α -Benzoinoxime & Zinc complexometrically.
2. Analysis Cu-Ni alloy.
3. Analysis of Stainless Steel – Insoluble residue by gravimetry, Ni gravimetrically using DMG, Fe volumetrically using Ce(IV) & Cr(III) volumetrically by persulphate oxidation.
4. Analysis of Type metal–Sn gravimetrically, Pb electrogravimetrically and Sb titrimetrically using KBrO_3
5. Quantitative analysis of the constituents & mixtures containing the following radicals
 - i. Fe (II) + Ni (II) - Fe gravimetrically as Fe_2O_3 and Ni using EDTA.
 - b. Fe (III) + Ca (II) - Fe gravimetrically as Fe_2O_3 and Ca using EDTA.
 - c. Cr (III) + Fe (III) – Using EDTA by Kinetic masking method.
6. Analysis of chalcopyrites, magnetite and ilmenite.
7. Ion-exchange chromatography: Separation and determination of $\text{Mg}^{2+}/\text{Zn}^{2+}$, $\text{Zn}^{2+}/\text{Cd}^{2+}$ & Cl^-/Br^- .

B. Any five of the following experiments are to be carried out:

1. Determination of COD of a water sample
2. Determination of Phosphorus.
3. Determination of dissolved oxygen (DO) by Winkler's method
4. Determination of nitrate & nitrite in water samples and sea water.
5. Analysis of heavy metals in waste water, sea water (Pb, Hg etc. By spectrophotometry)
6. Determination of available K in soil,
7. Nephelometric determination of sulphate/phosphate.
8. Determination of alkalinity of water samples
9. Determination of fluoride in drinking water by spectrophotometry and ion selective electrode
10. Determination of phosphates in detergents
11. Spectrophotometric determination of sulphur and phosphorus present in soil.

REFERENCES:

1. A.I. Vogel: A Text book of Quantitative Inorganic Analysis, (ELBS), 1978.
2. APHA, AWWA and WPCF: Standard Method for the Examination of water and Waste Water (Washington DC),1989,
3. I. M. Kolthof and E.P. Sandell: Quantitative Chemical Analysis.McMillan,1980
4. I. Williams, Environmental Chemistry, Wiley, 2001
5. Lobinski and Marczenko, Comprehensive Analytical Chemistry, Vol.30, Elsevier,1996

