

Management of plastics in environment- recycling, incineration and biodegradation.  
6hrs

**REFERENCES:**

1. A.K. De : Environmental Chemistry, (Wiley Eastern).
2. S.K.Banerji : Environmental Chemistry, ( Prentice Hall India), 1993.
3. Sawyer and McCarty, Chemistry for Environmental Engineering(McGraw Hill) 1978.
4. An Introduction to metallic corrosion and its prevention-Raj Narayan (Oxford-IBH, New Delhi), 1983.
- 5.Chemical& Electrochemical Energy Systems, R. Narayan & B. Viswanathan (University Press), 1998.
6. Industrial Electrochemistry, D. Peltcher & F. C. Walsh (Chapman & Hall)1990.
7. F.W. Billmeyer, Text book of Polymer science, 3rd Ednn, A Wiley- Interscience Publication, New York, 2005
- 8.. V.R. Gowariker, Polymer Science, New Age International (P) Ltd., New Delhi, 2012
9. R.W. Dyson, Specialty Polymers, Chapman and Hall, New York, 1987
10. J.R. Fried, Polymer Science and Technology, Prentice Hall of India Pvt. Ltd., New Delhi, 1999
11. P. Ghosh, Polymer Science and Technology, Tata - McGraw Hill, New Delhi, 1995

**AC P 457: INORGANIC CHEMISTRY PRACTICALS-II**

**COURSE OUTCOME:**

- The students will have hands on experience in the qualitative analysis of mixtures of Inorganic Salts containing 3 cations in which 1 less common metal ion and 2 anions.
- Students will learn the systematic methods of separation techniques.
- Apart from inorganic radicals they also learn the separation organic radicals.

Qualitative Analysis of mixtures of Inorganic Salts containing 3 cations and 2 anions (1 less common metal ions like Tl, W, Mo, V, Zr, Th, U, Ce, Ti and Li to be included among anions organic acid radicals, phosphate, borate and fluoride separation included).

**REFERENCES:**

1. Vogel's Text Book of Quantitative Chemical Analysis (5<sup>th</sup> Ed), G. H. Jeffrey, J. Bassette, J.Mendham and R. C. Denny, Longman, 1999
2. Vogel's Qualitative Inorganic Analysis (7<sup>th</sup> Ed), G. Svehla, Longman (2001).

**AC P 458: ORGANIC CHEMISTRY PRACTICALS-II**

**COURSE OUTCOME:**

- Student will gain the in-depth knowledge and skill in organic separations, purifications, qualitative analyses.
- Separation of binary mixtures of organic compounds containing both mono and bifunctional groups
- Students will learn preparation of suitable derivatives.

Separation and systematic qualitative analysis of binary mixtures of organic compounds containing both mono and bifunctional groups and preparation of suitable derivatives.

#### REFERENCES:

1. Practical Organic Chemistry-F .G. Mann and B. C. Saunders (ELBS, England), 2001.
2. Practical Organic Chemistry - A. I. Vogel (Longman-ELBS, England), 1971.
3. Experimental Organic Chemistry–Vol.I&II Singh et al(TMh, New Delhi)1981.
4. Semimicro Qualitative Organic Analysis–Cheronis etal Wiley-Eastern, New Delhi) 1964.
5. Vogel’s Text Book of Practical Organic Chemistry Including Qualitative Organic Analysis- B. S. Furniss *et al* (Longman-ELBS, England), 1978.
6. Manual of Organic Chemistry - Dey and Seetharaman.
7. Modern Experimental Organic Chemistry-John H. Miller and E.F. Neugil.

#### AC P 459: PHYSICAL CHEMISTRY PRACTICALS- II (At least 12 experiments are to be carried out)

#### COURSE OUTCOME:

- In continuation with the practical course introduced in the first semester, this course provides opportunity to students to test the concepts learnt in the basic physical chemistry course CH H 403.
  - Experiments have been designed on thermodynamics, kinetics, surface and interface chemistry. With the training gained.
  - Students will be able to handle issues related to metallurgical processes, waste water treatment, energy efficient processes, action of soaps and detergents etc.
1. Determination of cryoscopic constants of solvents and molecular weight of non volatile substances by thermal method.
  2. Determination of degree of dissociation, Vant Hoff factor and molecular weight of an electrolyte by cryoscopy method using copper calorimeter/Dewar flask..
  3. Heat of solution of a sparingly soluble compound in water by solubility method.
  4. Phase diagram of two component systems by thermal analysis.
  5. Phase diagram of three component system (a) 3 liquids with single binodal curve, and b) two liquids and one solid
  6. Kinetics of acid catalyzed hydrolysis of methyl acetate and determination of (a) order and rate constant and (b) Energy of activation.
  7. Determination of a) Energy of activation & b) rate constant for the First and second order kinetics of reaction between potassium persulphate and potassium iodide.