

(06 Hours)

- **WATER:-**

Raw water Treatment-filtration, coagulation, Hardness , Estimation and Calculation of Hardness, Boiler feed water, Boiler Problems - Scales & Sludge, Priming, Foaming Carryover, Caustic Embrittlement, Boiler corrosion, Internal and External methods, Municipal water and its Sterilization, Desalination Methods.

(06 Hours)

- **POLYMERS:-**

Biopolymers, Elastomers, Number and Weight Average Molecular Weight Structures and uses of Polystyrene, Teflon, PMMA, Nylon, Vulcanization of rubber, moulding constituents of Polymer, Moulding methods, Copolymers and their importance.

(10 Hours)

- **INTRODUCTION TO:-**

Brass alloys, Composites (RCC & Plywood), Nanomaterials, Superconductors, Non-conventional energy and Basics of Green Chemistry.

(06 Hours)

- **INSTRUMENTAL TECHNIQUES:-**

Theoretical & Experimental: Conductometry, Colorimetry, Potentiometry, pH-metry. Introduction to SEM and TEM.

(06 Hours)

- **DYES AND DRUGS:-**

Introduction, requirements for a true dye, Witt's theory, Mode of application and example of Vat and Acid dye. Introduction to drugs, Requirement for an idea drug, classification of drug, Antibiotics, Structure and activity of Penicillin, Synthesis of some Antimalarial drug (chloroquine, camoquine and chloroguanide), Vitamin-C.

(04 Hours)

- **POLLUTION:-**

Two methods of air sampling, effects of the air pollutants and their permissible limits, Global warming, Green house effects, Ozone hole, Smog, El Nino effect, Cottrell electrostatic precipitator and Cyclone collector, effects of the water pollutants and their permissible limits, COD, BOD, and DO.

(04 Hours)

- **CORROSION AND ITS CONTROL:-**

Galvanic series, Electrochemical Theory, Galvanic corrosion, Crevice corrosion, Pitting corrosion. General methods of Corrosion Control.

(Total Contact Time: 42 Hours)

BOOK RECOMMENDED:-

1. **Jain P.C. and Jain M.** 'Engg. Chemistry' Dhanpat Rai Publishing Co. New Delhi, 15th edition 2006.
2. **Chatwal G.R.**, 'Synthetic Dyes Drugs', Himalaya Publishing House, Latest Edition, 2004.
3. **Tripathy S.K., Pandhy A.K. And Panda A.K.**, 'Material Science & Engineering', Scitech Publications (India) Pvt. Ltd., 2nd Edition, 2009.
4. **Vogel A.I., and Mendham J.**, 'Vogel's Textbook of Quantitative Chemical Analysis Hall, 6th Edition, 2002.
5. **Sharma B.K.** ' Engg. Chemistry', Krishana Prakashan Media (P) Ltd, 2008.