

SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Analytical Chemistry)
Semester: III
Syllabus with Effect from: June - 2013

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| Paper Code: PS03ECHE02 | Total Credit: 4 |
| Title Of Paper: Selected Topics in Advanced Inorganic Chemistry | |

| Unit | Description in detail | Weightage (%) |
|------|---|---------------|
| I | Molecular Polyhedra Boron hydrides and related structures. three centre bonds; basic assumptions, three center orbital in known structures. equation of balance, topological theory and its applications. | 25% |
| II | Photo-Inorganic Chemistry Basics of photochemistry, quantum efficiencies and quantum yield, consequences of light absorption, luminescence, mutagenic effect of radiation, properties of the excited states, excited states of metal complexes, ligand field photochemistry | 25% |
| III | Solvent Extraction General introduction, application of solvent extraction, methods of extraction, classification of solvent extraction, solvent extraction systems and examples, solvent extraction of inner complexes | 25% |
| IV | Ion-Exchange General introduction, synthesis of chelating resins, influence of resin matrix on exchange equilibrium, chelating ion-exchanger with donor atoms like O, N, S. synthesis and use of macro cyclic molecules (crown ether) Sequestration General introduction and basics, metal buffers; Influence of pH on pM, effect of various parameters on pH. commercially important sequestration agent. applications in various industries like: soap and detergents, textiles , electroplating and metal cleaning. | 25% |

Basic Text & Reference Books:-

- Structure and Bonding vols. 1 & 6
Springer-Verlag.
- Inorganic Chemistry
Phillips and Williams, Oxford.
- Non-stoichiometric Compounds
L. Mandelcorn, Academic Press.
- Inorganic Chemistry
K.F. Purcell and J.C.Kotz,
Half-Saunders International Editions.
- Boron Hydrides
William N. Lipscomb, Benjamin. Inc.
- Chemistry of The Metal Chelate Compounds
A.E. Martell and M. Calvin,
Prentice-Hall Inc., Englewood Cliffs, New Jersey.
- Treatise on Analytical Chemistry, Part-I. Vol.3
I.M. Kolthoff and P.J.Elving,



- Interscience publishers New York-London.
- Chelates in Analytical Chemistry, Vol. 1
H.A. Flaschka and AJ .Barnard,
Marcel Dekker Inc., N.Y.
 - Co-ordination Chemistry Reviews, Vol.7(1)
A.B.P. Lever,
Elsevier Publishing Company, Amsterdam.
 - New Pathways in Inorganic Chemistry
E.A.V. Ebsworth, University Press, Cambridge.
 - The sequestration of metals: Theoretical considerations and practical applications.
Smith Robert L.

