

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

Paper Code: PS03CINC03	Total Credit: 4
Title Of Paper: Organometallic Compounds & Complex Equilibria	

Unit	Description in detail	Weightage (%)
I	<p>General Introduction and Principles: Factors governing the properties of organometallic compounds. General trends in chemical properties. Theory of metal-carbon bond. Preparative methods, typical reactions and applications.</p> <p>Organo Boranes: Introduction. Synthesis of organoboranes via organometallics. Hydroboration. Hydroboration of dienes, Cyclic olefins and acetylene.</p>	25%
II	<p>Synthetic and Catalytic Aspects of Organometallic Chemistry: Introduction. Organometallic compounds as stoichiometric and catalytic reagents. Synthetic applications of main group organometallics. Transition metal organometallics as catalysts and synthetic reagents.</p>	25%
III	<p>Biological Application and Environmental Aspects of Organometallic compounds: Introduction. Organometallics in medicine. Organometallics in agriculture and horticulture. Organometallics in industry. Cycling of inorganic and organometallic compounds in the environment. Environmental methylation.</p>	25%
IV	<p>Complex Equilibria: Types of Complex Equilibria in Solution and Equilibrium Constants: Basic principles, Mathematical functions and their interrelationship. Statistical considerations. Factors affecting the stability constants of Metal complexes. Mixed-ligand complexes.</p> <p>Experimental Methods for the Determination of Stability Constants: Ion exchange methods, Polarographic methods. Solubility methods and Least square method for computing stability constant.</p>	25%

Basic Text & Reference Books:-

- Organometallic Compounds, Vol.1 & 2 Coates, Green and Wade, Methuen & Co.Ltd. London EC4.
- Organometallic Compounds G.E. Coates, John Wiley & Sons, Inc., New York.
- Organometallic Chemistry H. Zeiss, Reinhold Publishing Corporation, New York.
- Organometallic Chemistry, Rochow. Organometallic Chemistry, R.C. Mehrotra & Anirudh Singh.
- Chemistry of Complex Equilibria, M.T. Beck, Van Nostrand Reinhold Company, London.
- Determination of Stability Constants, F.J.C. Rossotti and H.Rossotti.
- Progress in Inorganic Chemistry, Vol. 1, F.A.Cotton, Interscience, Pub.Inc., New York.
- Chemistry of Metal Chelate Compounds, A.E.Martell and M.Calvin, Prentice - Hall, Inc. Englewood Cliffs, N. J.
- Organic Sequestering Agents, S. Chaberek and A.E.Martell, John Wiley & Sons.Inc. New York.

