

.....: RECENT ADVANCEMENT IN CHEMISTRY

L	T	P	Cr
2	0	0	2

RATIONALE
The main aim of modern chemistry is to improve the communication and conversation among the scientists, researchers, engineers and policy makers, who are working under the area of modern chemistry. Modern chemistry deals with the publishing of all type of research papers with all perspectives of chemistry. Today's international, interdisciplinary, team-oriented, and technology-intensive research has created an environment more fraught with the potential for error and distortion.

UNITS	CONTENTS	Contact Hrs.
I	GREEN CHEMISTRY : Basic Principles of Green Chemistry. Designing a Green Synthesis: Choice of starting materials, choice of reagents, choice of catalysts, choice of solvents. Green reagents, Green catalysts, Phase transfer catalysis for greens synthesis. Organic synthesis in solid phase. Versatile ionic liquids as green solvents. Real-World cases of Green Chemistry.	4
II	NANOCHEMISTRY : Introduction, classification of nanoparticles, synthesis, characterization, properties and application of nanomaterial.	4
III	INTRODUCTORY QUANTUM CHEMISTRY : Postulates of Quantum Mechanics. Operators, Chemical bonding: Born-Oppenheimer approximation. Vibrational treatment of hydrogen molecule ion. Valence bond and MO (LCAO) treatment of hydrogen molecule.	4
IV	BIOCATALYSTS AND INDUSTRIAL WASTE TREATMENT : Overview and applications, Benign Design, GHG emissions, Safer solvent, Pollution Prevention, CFC's and ozone layer, ozone layer depletion. Waste treatment such as distillery, petroleum, fertilizers, paper, steel plants, drug and pharmaceuticals .	4
V	ANALYTICAL TECHNIQUES AND SPECTROSCOPIC TECHNIQUES: Diffraction Methods: X-Ray Diffraction, Neutron Diffraction, Electron diffraction. Thermal Methods: TGA, DTA, DSC, Thermometric Titration. Adsorption/Desorption Techniques : BET and EGME methods of determination of external and total surface area. NMR, IR and UV Techniques in the identification and characterization of organic compounds,	4

S.No	REFERENCE BOOKS :	Authors
1	Atoms & Molecules	M. Karplus and Porter,
2	The Conservation of Orbital Symmetry,	Woodward & Hoffmann, Academic Press, 1970
3	Inorganic Electronic Spectroscopy,	A. B. P. Lever, Elsevier, 1986.

