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Every Good Work

# SACRED HEART COLLEGE (AUTONOMOUS)

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A Don Bosco Institution of Higher Education, Founded in 1951 \* Affiliated to Thiruvalluvar University, Vellore \* Autonomous since 1987

Accredited by NAAC (4<sup>th</sup> Cycle – under RAF) with CGPA of 3.31 / 4 at 'A+' Grade

## Name of the Programme: M Sc. Chemistry

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ELECTIVE – II: GREEN CHEMISTRY	CH719B	<ul style="list-style-type: none"><li>To know eco-friendly methods of synthesis.</li><li>Understanding the synthesis of any type of organic compounds with the revolution of Green Chemistry</li></ul>	<ul style="list-style-type: none"><li>Understand and compare the eco-friendly methods of synthesis.</li><li>Appraising the measurement, Prevention and control of life-cycle assessment</li><li>Relate and asses the Renewable energy as Biomass, Fossil Fuels, solar energy and some other natural chemical resources.</li><li>Analyse the organic compounds which found in application of green synthesis with the revolution of Green Chemistry.</li><li>Compare and analyze Green Technology and Alternative Energy Sources such as Microwaves, Electrochemical synthesis</li><li>Design the next generation agrochemicals and Industrial Case Studies from natures, using green reagents and bio catalyst.</li></ul>	Global developmental needs

2	ELECTIVE –I RESEARCH METHODOLOGY	CH821A	<ul style="list-style-type: none"> <li>To learn the purpose and methods of research</li> <li>To study the interpretation of knowledge of e-sources in literature search</li> <li>To write a scientific report based on the research done</li> </ul>	<ul style="list-style-type: none"> <li>Understanding the importance of the research and to demonstrate high ethical values in research</li> <li>Employ different methodologies to conduct a literature survey</li> <li>Analyse and execute a proper literature survey for a chosen problem in their respective field of research</li> <li>Integrating various level of hypothesis in analysing the data obtained during the research and interpret them</li> <li>Organizing and evaluating the data obtained using various software's</li> <li>Compile a research article using the art of technical writing and subsequently publish</li> </ul>	Global developmental needs
3	INORGANIC CHEMISTRY – III	CH919	<ul style="list-style-type: none"> <li>To study about the basic theory of Inorganic spectroscopy.</li> <li>To illustrate the UV, IR and Raman spectral properties of some inorganic compounds and complexes.</li> <li>To study and illustrate the different types of magnetic behaviour in inorganic materials.</li> <li>To learn the basic concepts of superconductivity behaviour in the materials</li> <li>To apply the NMR, NQR,</li> </ul>	<ul style="list-style-type: none"> <li>Students can recognize and interpret the spectroscopic techniques in terms of interaction of electromagnetic radiation with molecules</li> <li>Students can infer about the magnetic properties and superconductivity of materials and can able to calculate the magnetic susceptibility of the materials.</li> <li>Students can describe the principles and to interpret the instrumentation of various spectroscopic techniques.</li> <li>Students can illustrate the principle involved in ESR, NQR and Mossbauer Spectroscopy and distinguish chemical species using these spectroscopy</li> </ul>	local, regional ,national and global developmental needs

			<p>ESR and Mossbauer techniques in to simple inorganic systems.</p> <ul style="list-style-type: none"> <li>To learn the instrumentation of advance inorganic spectroscopy techniques.</li> </ul>	<ul style="list-style-type: none"> <li>Students can apply the principles of spectroscopy to predict the structure of compounds and analyse the various spectra of complexes</li> <li>Students can able to propose and formulate the structure of a new compound based on the spectroscopic data</li> </ul>	
4	ELECTIVE-III: INORGANIC PHOTOCHEMISTR Y & MATERIALS SCIENCE	CH921A	<ul style="list-style-type: none"> <li>To provide the students with basic information on matter radiation interactions and their consequences excited state formation modes, photophysical and photochemical deactivation pathways, and application of theoretical knowledge.</li> <li>Students are equipped with the knowledge on composition, molecular and electronic structures of inorganic compounds.</li> <li>Students will know to identify and quantify the course of photophysical and photochemical processes.</li> </ul>	<ul style="list-style-type: none"> <li>Understand the photochemical pathways in various chemical reactions</li> <li>Elucidate the photophysical kinetics of unimolecular reaction evaluating using Stern-Volmer equation.</li> <li>Understand weak and strong interaction in photochemical process and construct a mechanism for transformation of low energy reactants to high energy products.</li> <li>Elucidate the mechanism involved in various metal complex systems.</li> <li>Learn and apply the principles of the materials and constructing a reaction methodology using various precursor molecules.</li> <li>Elucidate the imperfections in the crystal lattice and describing the phase transformation in inorganic materials.</li> </ul>	National and global developmental needs

5	ELECTIVE – II: POLYMER CHEMISTRY	CH921B	<ul style="list-style-type: none"> <li>To gain knowledge in the preparation, properties, characterization and uses of polymers.</li> <li>To appreciate the role and applications of polymer substances</li> </ul>	<ul style="list-style-type: none"> <li>Understand different types of polymers and learning the polymerization techniques</li> <li>Enumerate the reaction mechanism that takes place in the polymers</li> <li>Demonstrate the structural morphology of polymers</li> <li>Determining the molecular weights using different techniques.</li> <li>Devise synthetic methodology for industrial polymers and assessing its importance</li> <li>Elucidate the synthetic methods of various novel polymers.</li> </ul>	Global developmental needs
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6	PHYSICAL CHEMISTRY PRACTICAL- II	PCH1015	<ul style="list-style-type: none"> <li>To understand the principles that govern the basic electrochemical experiments</li> <li>To learn the physical methods used in determination of parameters such as pH, conductance and EMF etc.</li> </ul>	<ul style="list-style-type: none"> <li>Learn and apply the principles of conductometry and potentiometry effectively for various titrations</li> <li>Explain the conductometric titration of strong acid, weak acid and mixture of acids with strong Base.</li> <li>Determine the equivalent conductance of strong electrolytes at infinite dilution and dissociation constant of weak electrolyte</li> <li>Calculate the pH of a buffer solution using emf measurements</li> <li>Prepare a salt bridge for potentiometric experiments.</li> <li>Verify the various laws like Ostwald's dilution law and Kohlrausch's law conductometrically and design working electrodes</li> </ul>	local, regional ,national and global developmental needs
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