

## Lecture Plan

**Name of the college: Government College of Arts, Science and Commerce, Sanquelim- Goa**

**Name of Faculty:** Ankita M. Vernekar

**Subject:** Chemistry

**Paper code:** CHD-105

**Program:** T Y BSc

**Division:** A

**Academic year:** 2024 - 2025

**Semester:** V

**Total Lectures:** 30

**Course Objectives :** To enable the students to acquire basic knowledge in Electrochemistry and Nuclear chemistry.

### Expected Course Outcome:

1. To identify polar and non-polar molecules.
2. To study applications of dipole moment in elucidation of molecular structure.
3. To understand magnetism and their applications in recent technology.
4. To predict use of photochemical reactions towards environmental prospects.
5. To implement of electrical properties of materials in development of smart materials.

### Student Learning Outcome:

1. To identify polar and non-polar molecules.
2. To study applications of dipole moment in elucidation of molecular structure.
3. To understand magnetism and their applications in recent technology.
4. To predict use of photochemical reactions towards environmental prospects.
5. To implement of electrical properties of materials in development of smart materials.

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
June	28/06/2024	29/06/2024	1	<b>Electrical properties</b> Polar and non-polar molecules, Dipole moment	Identify polar and non-polar molecules	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
July	01/07/2024	06/07/2024	2	Units of dipole moment, Distortion or Induced polarisation,		Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
July	08/07/2024	13/07/2024	2	Orientation polarisation. Determination of dipole moment: Vapour Temperature Method, Refraction Method.	Classify types of polarisation	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
July	15/07/2024	20/07/2024	2	Applications of dipole moment.		Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R.

				Ferroelectricity: Ferroelectric effect			Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
July	22/07/2024	27/07/2024	2	anti-ferroelectric and ferrielectric effect, Pyroelectricity, Piezoelectricity and their applications.	Explain different electric effect	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
July/ August	29/07/2024	03/08/2024	2	<b>Magnetic properties</b> Definitions and Units: Magnetic Permeability, Magnetic Susceptibility, Types of Magnetic substances,		Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
August	05/08/2024	10/08/2024	2	Measurement of magnetic susceptibility by Quincke's method	Explain methods of determination of magnetic susceptibility	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N.

							Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
August	12/08/2024	17/08/2024	2	Langevin's theory of diamagnetism and Paramagnetism.	Esxplain theories of magnetism	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
August	19/08/2024	24/08/2024	2	Interpretation of paramagnetic property of oxygen molecule and nitric oxide molecule.	Interpret paramagnetic property of molecules	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
August	26/08/2024	31/08/2024	2	Introduction, Laws of photochemistry: Grothus-Draper law, Stark-Einstein law.	Describe laws of photochemistry	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
September	02/09/2024	07/09/2024	2	Quantum yield or efficiency, factors affecting quantum efficiency,		Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal

							publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
September	09/09/2024	14/09/2024	<b>GANESH CHATURTHI BREAK</b>				
September	16/09/2024	21/09/2024	2	reasons for low and high quantum efficiency, experimental determination of quantum yield.	Describe and determine quantum efficiency	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
September	23/09/2024	28/09/2024	2	Primary and secondary processes. Potential energy curves for primary photochemical processes		Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
September/ October	30/09/2024	05/10/2024	2	Photochemical reactions. Non radiative and radiative transitions, Jablonski diagram	Describe Jablonski diagram	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N.

							Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
October	07/10/2024	12/10/2024	2	Photosensitization: luminescence, fluorescence, phosphorescence and Chemiluminescence.	Explain fluorescence	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
October	14/10/2024	19/10/2024	2	Laser amplifier principle, Ruby laser, Helium-Neon laser, applications of laser	Find different types of laser	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan
October	21/10/2024	21/10/2024	2	Photo Electron spectroscopy, types of photoelectron spectroscopy and applications.	Assignment on different types of photo electron spectroscopy	Power point presentation/ Smart board	1. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal publishing company 2015. 2. N. B. Laxmeshwar, S. M. Malushte, A. S. Mulye, V. N. Kulkarni, Concepts of Physical Chemistry, Chetana Prakashan

**\*Assessment Rubrics**

<b>Component</b>	<b>Max Marks</b>
ISA 1	10
ISA 2	
Practical	-
Project	-
Semester End Exam	40