Sankalchand Patel University

Faculty of Science

B.Sc. Chemistry (SEM-V)

In Effect from Academic Year 2018-19

Subject Code: 1SC1030503	**Subject Title: Physical Chemistry-I**

Course Objective:

To meet the growing demand of Specialization and Advanced Courses in applied science. To help the colleges to update and modernize their laboratories. To redesign the courses the special emphasis on local requirements, environment, to link the courses with requirements of the industries and research. To prepare for National level entrance test like NET/SLET/JRF and other competitive exams.

Teaching scheme (hours) per week		**Credit**		**Theory Marks**		**Practical Marks**		**Total**
Theory	**Practical**	**Theory**	**Practical**	**University Assessment**	**Cont. Assessment**	**University Assessment**	**Cont. Assessment**	
3	**-**	**3**	**-**	**70**	**30**	**-**	**-**	**100**

UNIT	DISCRIPTION IN DETAIL	Lectures	Weightage
I	**Electro Motive Force** Chemical Cell: Without Transference with Transference Verification concentration Cell and Its EMF equation, Electrolyte concentration cell, Concentration cell without Transference Cell, Concentration with transference cell. Electrode concentration cell, amalgam Concentration, Gas Concentration Cell, Liquid-Liquid junction Potential application of EMF measurements Determination, Degree of hydrolysis of Salt, Solubility of sparingly soluble salt, Stability constant of complex, Dissociation constant of weak acid, Numericals	**15**	**33%**
II	**Statistical thermodynamics** Introduction, combination and permutation, probability, sterling approximate formula, Types of statistics Maxwell-Boltzman, Bose-Einstine Statistics, Fermi-Direct statistics, Partition Function, translational, vibrational & rotational partition functions. Numericals	**18**	**34%**
III	**Macromolecules.** Classification of polymers, Tactility of polymers, polymerization reaction with example, Addition polymerization,(Polyethylene, Polystyrene, PVC) Condensation Polymerization (Nylon-66, Dacron) Mechanism of polymerization,-Free radical chain polymerization, Anionic polymerization, Cationic polymerization, Kinetics of free radical chain polymerization, Degree of Polymerrization, Molar masss of polymer, Number Average Molar Mass, Weight average Molar Mass, Determination of molar mass of Macro molecules, Viscosity Method ,Light Scattering method, Numerical,	**15**	**33%**

Learning Outcomes

Students can understand the atomic and molecular basis of Physical chemistry. They can know the impact of Physical chemistry on the fields of medicine, pharmacy and its impact on the global economy. They can understand the fundamental principles of molecular structure and shape as they relate to organic molecules and their properties. They can identify organic molecules by functional group: alkane, alkene, alkyne, haloalkane, alcohol, thiol, ether, sulfide, amine, aldehyde, ketone, carboxylic acid and carboxylic acid derivatives.

LIST OF BOOKS:

1) Physical Chemistry**:** G. M. Barrow, 5th Edition, McGraw-Hill education, India.
2) Advanced Physical Chemistry**:** Gurdeep Raj, 35th Edition (2009), Goel / Krshina Publishing House.
3) Principles of Physical Chemistry**:** Puri, Sharma and Pathania, 42nd Edition, Vishal Publishing Company.
4) Polymer Science**:** Gowariker, Viswanathan and Sreedhar, 1st Edition (2012 reprint) New Age International.
5) Essentials of Nuclear Chemistry**:** Arnikar, 4th Edition (2012 reprint), New Age International.
6) Physical Chemistry**:** Atkins, 9th Edition. Oxford University Press.
7) Advanced Physical chemistry**:** Gurtu and Gurtu, 11th Edition ,PragatiPrakashan.
8) Physical chemistry**:** Levine, 6th Edition, McGraw-Hill education, India