

**SARDAR PATEL UNIVERSITY****Programme: B.Sc (Chemistry)****Semester: VI****Syllabus with effect from: November/December-2013**

<b>Paper Code: US06CCHE05</b>		<b>Total Credit: 3</b>
<b>Title Of Paper: Physical Chemistry</b>		
<b>Unit</b>	<b>Description in detail</b>	<b>Weighting (%)</b>
I	<b>Vibrational And Rotational Spectroscopy</b> Introduction, Molecular spectra, Origin of Infra red spectra, Rotational (or) Microwave spectrum, Classification of molecules, Rigid rotor model, Selection Rule, Effect of isotopic substitution on the transition frequencies, Refractive intensities of spectral line, Vibrational rotational Spectra, Harmonic oscillator model, Force constant, Normal modes of vibrations of atoms in polyatomic molecules, Vibrational Coupling, Numericals. <b>Basic Text &amp; Reference Books :-</b> ➤ Instrumental Methods of chemical Analysis by B.K.Sharma. 26 <sup>th</sup> Edition	
II	<b>Physical Properties And Chemical Constitution</b> Introduction, Refractive Index, Optical Activity & Chemical constitution, Electrical properties elucidating the molecular structure, Dipole moments, Electrical polarization of molecules, Dipole moments and dielectric constant, Dielectric polarization and dielectric constant, Clausius-mosotti equation, Determination of dipolemoments, vapour-temperature method, Dilute solution method, Bond moments and molecular dipole moments, Dipole moments and structure of molecules, Numericals. <b>Basic Text &amp; Reference Books :-</b> ➤ Text book of physical Chemistry by P.L.Soni, O.P.Dharmarha, U.N. Dash.	
III	<b>Entropy And Third Law Of Thermodynamics</b> Third law of thermodynamics, Molecular basis of Entropy, Translational Entropy, Rotational Entropy, Vibrational Entropy, Molecular basis of the third law, Trouton's Rule, Free-Energy, Standard free energy of formation, Free energy and Pressure, Free energy and the equilibrium constant, Free energy and Temperature, Free energy function, Equilibria and Distributions, Fugacity, Numericals. <b>Basic Text &amp; Reference Books :-</b> ➤ Physical Chemistry by Gordan M. Barrow. 5 <sup>th</sup> Edition.	
IV	<b>Colloidal State</b> Types of Colloidal system, Classifications of Colloids, Lyophobic and Lyophilic Sols, Size range, Preparation and Properties of colloids solution, Dialysis, Electrodialysis, Ultrafiltration, Ultramicroscope, Electrical Properties, Charge on colloidal particles, Zeta potential, Coagulation of Colloidal solution, Flocculation values, Electrophoresis, Electrosmosis, Importance and Applications of Colloids, Numericals. <b>Basic Text &amp; Reference Books :-</b> ➤ Principles of physical chemistry by puri, sharma and pathania. 44 <sup>th</sup> Edition.	

