

SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Physical Chemistry)
Semester: III
Syllabus with Effect from: June - 2013

Paper Code: PS03CPHC07		Total Credit: 4
Title Of Paper: Selected Topics in Physical Chemistry		
Unit	Description in detail	Weightage (%)
I	Geometrical Crystallography : Periodicity in Crystals – Representation of a pattern, repetition of an objects, translation periodicity, representation of a lattice, notation of planes in a lattice, relationships between planes Symmetry elements – The operation of rotation, Proper rotation axes, improper rotation axes, screw axes, glide planes Symmetry groups – Point groups, categories of crystals, plane groups, space lattices, space groups, super groups and subgroups	25%
II	Statistical Thermodynamics : Introduction, Frequency distribution, binomial, Poisson and normal distribution, energy states and energy levels, macro states and microstates, thermodynamic probability, the Bose-Einstein statistics, the Fermi-Dirac statistics, the Maxwell – Boltzmann statistics	25%
III	Statistical Thermodynamics : The statistical interpretation of entropy, the Bose-Einstein distribution function, The Fermi-Dirac distribution function, the classical distribution, comparison of distribution functions for indistinguishable particles, the Maxwell – Boltzmann distribution function, the partition function, thermodynamics properties of a system	25%
IV	Electrochemistry – Theoretical and Application Aspects : Introduction, Electrolysis, Arrhenius theory of ionization, Ostwald’s dilution law, Application of electrolysis, Ionic Atmosphere its radius, Relaxation Time, DHO equation and its validity and limitation Wein effect, DH effect, Industrial applications of Electrochemistry	25%

Basic Text & Reference Books:-

- Crystallography and Crystal Chemistry F. B. Bloss Halt Reinhold & Winston Inc., New York
- Introduction to Solids L. V. Azaroff Mc-Graw Hill Co., New York
- Molecular Statistics for Students of Chemistry L. A. Woodward Clarendon Press, Oxford
- Elements of Statistics for Students of Chemistry L. K. Nash Addition – Wesley Publishing Co., London
- Thermodynamics, Kinetic Theory and Statistical Thermodynamics Francis W. Sears, Gerhard L. Salinger Narosa Publishing House, New Delhi
- An introduction to Electrochemistry S. Glasstone Affiliated East-West Press Pvt. Ltd., New Delhi
- Electrochemistry S. Glasston, New York
- Industrial Electrochemistry Derek Pletche Chapman & Hall, New York
- Modern Electrochemistry, Vol. 2 J. M. Bockris and A. K. N. Reddy Plenum Press, New York
- The Principles of Electrochemistry Duncan A. MacInnes Dover Publications, Inc. New York
- Electrolytic Solutions R. A. Robinson & R. H. Stokes Butterworths, London

