SEMESTER-I
Paper S-1053

Physical Chemistry

Time: 3 Hrs. **M.M. 75 marks**
Note: The paper will be divided into two sections.

Section-A One question with 10 parts (short answer word limit 20) spread over whole syllabus. Each part will be of 1 mark and candidate is required to attempt all the ten parts

Total 10 marks

Section-B Five questions (answer not exceeding 500 words) are from each Unit with internal choice will be asked and the candidate is required to attempt all five questions. Each question will be of 13 marks

Total 65 marks

Unit-I

Chemical kinetics: Different methods to determine rate of reaction, factors affecting rate, half life time, order of reaction, entropy and activation energy of reaction and determination, idea of chain conservation, parallel and opposite reactions, oscillation reaction, kinetic salt effect and solvent effect on rate.

Unit-II

Thermodynamics: thermodynamic systems, laws of thermodynamics and their applications, concept of work, entropy, internal energy, free energy, spontaneous energy, heat engine efficiency , gibb's-helmholtz equation, clausius-clapeyron equation and their uses, chemical potential and uses, heat capacity –Cp and Cv.

Unit-III

Electrochemistry: Standard electrode potential, EMF measurement, different types of electrodes, electrolysis, conductometric and potentiometric titration, pH concept, polarization, overvoltage, decomposition potential storage cells, fuel cells, electrochemical cells and notations.

Unit-IV

Thermochemistry: Thermochemical reactions, laws of thermochemistry, Kirchhoff equation, standard heat of formation, combustion, heat of reaction and their related mathematical problems.

Unit-V

Surface chemistry: Chemical and physical adsorption, adsorption isotherms, Frendlich-langmuer adsorption isotherms, reactions on solid surface, industrial uses of adsorption.