B. Sc. Ist Year (IInd Semester) Paper-V
(CH-105) Physical Chemistry (Theory)

M. Marks: 32 **Time: 3 Hrs.**

Note: Nine questions will be set. **Q. No. 1**, based on whole syllabus, is compulsory. There will be four questions from section A **and** four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no. 1 carry 8 marks and all questions in Section A & B (not more than 2 - 3 parts) carry 6 marks each .

Section– A (22 Periods)

Kinetics

Rate of reaction, rate equation and its types, factors influencing the rate of a reaction – concentration, temperature, pressure, solvent, light, catalyst. Order of a reaction, integrated rate expression for zero order, first order, second and third order reactions. Half-life period of a reaction. Effect of temperature on the rate of reaction – Arrhenius equation. Theories of reaction rate
– Simple collision theory for unimolecular collision. Transition state theory of bimolecular reactions.

Section- B (23 Periods)

Electrochemistry

Electrolytic conduction, factors affecting electrolytic conduction, specific conductance, molar conductance, equivalent conductance and relation among them, their variation with concentration. Arrhenius theory of ionization, Ostwald's Dilution Law. Debye- Huckel – Onsager's equation for strong electrolytes (elementary treatment only), Application of Kohlrausch's Law in calculation of conductance of weak electrolytes at infinite dilution. Applications of conductivity measurements: determination of degree of dissociation, determination of K_a of acids determination of solubility product of sparingly soluble salts, conductometric titrations. Concepts of p H and p K_a , Buffer solution, Buffer action, Henderson – Hazel equation, Buffer mechanism of buffer action.