NOTE: THE FOLLOWING PAPER  CORE V – CHEMISTRY PAPER IV OF B.S.C. CHEMISTRY FROM THE ACADEMIC YEAR 2012-13 IS REVISED AND FURNISHED BELOW. THERE IS NO CHANGE IN THE REMAINING PAPERS.

CORE V – CHEMISTRY PAPER IV

Teaching hours: 45 hours per semester (3 hours per week)

Subject description
This paper presents the basic aspects of thermodynamics, adsorption, chromatography and computer programming.

Goals
To enable the students to understand the laws of thermodynamics, adsorption and the Computer C Programming.

Objectives
To study the applications of computer programming in chemistry and the importance of send and thermodynamics, adsorption and chromatography.

UNIT I:

UNIT II
General conditions of equilibrium and spontaneity- conditions of equilibrium and spontaneity under constants – definition of A and G – physical significance of – dA and dG.

UNIT III ADSORPTION AND CATALYSIS
Adsorption – types, differences between chemisorption and physisorption – Adsorption of Gases by solids – Adsorption isotherms – Freundlich, Langmuir isotherms derivations – BET EQUATION (Derivation not required) – Adsorption from solutions – ion exchange adsorption Types and applications – Techniques to determine the adsorbed molecules on solid surfaces.
UNIT IV
CHROMATOGRAPHY
Chromatographic methods – Partition Adsorption – Basic principles – Differential migration, adsorption phenomenon, nature of adsorbents, choice of solvents and Rf value – Techniques and applications of Paper, Column and TLC – Gas chromatography and HPLC (Basic principles only).

UNIT V Some important C programs for Chemistry
Programs: To calculate pH of solution and find that it is basic, acidic or neutral. Calculation of pH of a solution using Henderson equation. To compute the order of a reaction. To compute the half-life period of a reaction. To compute the rate constant of a 1st order Reaction. To compute the energy of activation of a reaction.

REFERENCES:
1. Principles of physical chemistry, B.P.Puri, L.R.Sharma and M.S.Phathania, Shobanlal Nagin Chand & Co.
2. Physical chemistry G.W.Castelan, Narosa publishers.
5. Computer for chemists – By PundirBansal – PragatiPrakasam Pubs