

B. Sc. Ist Year (Ist Semester)
Paper-II (CH-102) 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 (23 Periods)

Gaseous States

Kinetic Molecular Theory of Gases, Maxwell's distribution of velocities and energies (derivation excluded) Calculation of root mean square velocity, average velocity and most probable velocity. Collision diameter, collision number, collision frequency and mean free path (Derivations excluded), Deviation of Real gases from ideal behavior, Derivation of Van der Waal' s Equation of State, its application in the calculation of Boyle' s temperature (compression factor)

Critical Phenomenon

Critical temperature, critical pressure, critical volume and their determination. PV isotherms of real gases, continuity of states, the isotherms of Van der Waal' s equation, relationship between critical constants and Van der Waal' s constants. Critical compressibility factor. The Law of corresponding states.

Section- B (22 Periods)

Liquid States

Structure of liquids, Properties of liquids – surface tension, refractive index, viscosity, vapour pressure and optical rotation.

Solid State

Classification of solids, Law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry and symmetry elements, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of Laue method, rotating crystal method and powder pattern method