

FCYE108	Chemistry -I	3-0-0	3
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Gaseous state: Postulates of Kinetic theory of gases, derivation from ideal behavior, van der Waals equation of state. Critical phenomena: PV isotherm of real gases, continuity of states, the isotherms of van der Waals equation, relationship between van der Waals constant and critical constants, the law of corresponding states, reduced equation of state **[5hrs]**

Liquid state: Intermolecular forces, structure of liquids (qualitative description), liquid crystals: difference between liquid crystal, solid and liquid. **[2hrs]**

Solid state: space lattice and unit cell. Qualitative description of X-ray diffraction in crystals. Derivation of Bragg's eqn., **[2hrs]**

Atomic structure: de-Broglie matter waves, Uncertainty principle, Schrodinger wave equation, quantum numbers and its significance, shape of s, p, d orbitals, electronic configuration of elements. **[3hrs]**

Periodic properties: Screening effect, effective nuclear charge, size of atoms and ions, ionization potential, electron affinity, electronegativity, variable valency and oxidation states, horizontal, vertical and diagonal relationship. **[4hrs]**

Chemical bonding: Ionic bond, polarizability, Fajan's rule, lattice energy and Born-Haber cycle, solvation energy and solubility of ionic compounds, **[3hrs]**

Covalent bond: Lewis theory, dipole moment and its application, percentage ionic character from dipole moment and electronegativity, VBT, hybridization, VSEPR theory, MOT (homo and heteronuclear diatomic molecule), Resonance **[5hrs]**

Metallic bond (free electron and band theories) H-bond, Vanderwaals force. **[3hrs]**