GROUP - (C) ELECTIVE PAPER
PAPER III. LIQUID STATE

M.M. - 75 **60 Hrs. (2 Hrs./Week)**

Units	Topics
I	**General Properties of Liquids** **13 Hrs.**
	(a) Liquids as dense gases, liquids as disordered solids, some thermodynamic relations, internal pressure and its significance in liquids. Equations of state, critical constants. Different types of intermolecular forces in liquids, different potential functions for liquids, additivity of pair potential approximation.
	(b) A classical partition function for liquids, correspondence principle, configuration integral, configuration properties.
II	**Theory of Liquids** **9 Hrs.**
	Theory of liquids, partition function methods or model approach; single cell models, communal energy and entropy, LTD model, significant structure model.
III	**Distribution Function and Related Equations** **14 Hrs.**
	Radial distribution function methods, equation of state in terms of RDF. Molecular distribution functions, pair distribution function. Relationship between pair distribution function and pair potential function. The IBG equation, the HNC equation, the PY equation, cluster expansion.
IV	**Methods for Structure Determination and Computational Techniques** **12 Hrs.**
	Spectroscopic techniques for liquid dynamic structure studies, Neutron and X-ray scattering spectroscopy.
	Computation Techniques - Monte Carlo and molecular dynamics methods.
V	**Supercooled and Ionic Liquids** **12 Hrs.**
	Supercooled and ionic liquids, theories of transport properties; non Arrhenius behaviour of transport properties, Cohen. - Turnbull free volume model, configurational entropy model, Macedo-Litovitz hybrid model, glass transition in supercooled liquids.