81. POST M.Sc. DIPLOMA IN RADIOLOGICAL PHYSICS

PART-A (40 Marks)

MATHEMATICAL PHYSICS AND NUMERICAL METHODS

CLASSICAL MECHANICS

QUANTUM MECHANICS

EM THEORY
PART-B (60 Marks)


ELECTRONICS

**NUCLEAR PHYSICS**

**SOLID STATE PHYSICS**
**Crystalline state:** Crystal translational vectors - unit cell - Bravais lattices - Crystal systems - Miller indices - symmetry operations - Point groups - Space groups and their notation - Crystal structures of BCC, CsCl, NaCl, HCP, Diamond and ZnS - Bragg’s Law, Van Laue treatment of X-ray diffraction and its equivalence with Bragg’s law - Atomic structure factor - Geometrical structure factor and Debye Wallar factor - Concept of Reciprocal lattice - Concept of Brillouin zones - Experimental methods of x-ray diffraction of crystals – Laue and Powder methods - Bloch theorem - behaviour of electron in periodioc potentials - Kronig-Penney model - E vs K relation - density of states in a band - effective mass of electron - negative effective mass and concept of hole - Distinction between metals, semiconductors and insulators - Intrinsic semiconductors - band model - Fermi level - Hall effect in semiconductors.