CSIR-UGC National Eligibility Test (NET) for Junior Research Fellowship and Lectureship

PHYSICAL SCIENCES

PART ‘A’ CORE

I. Mathematical Methods of Physics


II. Classical Mechanics


III. Electromagnetic Theory


IV. Quantum Mechanics


V. Thermodynamic and Statistical Physics


VI. **Electronics and Experimental Methods**


Data interpretation and analysis. Precision and accuracy. Error analysis, propagation of errors. Least squares fitting,

**PART ‘B’ ADVANCED**

I. **Mathematical Methods of Physics**


II. **Classical Mechanics**

Dynamical systems. Phase space dynamics, stability analysis. Poisson brackets and canonical transformations. Symmetry, invariance and Noether’s theorem. Hamilton-Jacobi theory.

III. **Electromagnetic Theory**

Dispersion relations in plasma. Lorentz invariance of Maxwell’s equation. Transmission lines and wave guides. Radiation- from moving charges and dipoles and retarded potentials.

IV. **Quantum Mechanics**


V. **Thermodynamic and Statistical Physics**


VI. **Electronics and Experimental Methods**

Linear and nonlinear curve fitting, chi-square test. Transducers (temperature, pressure/vacuum, magnetic fields, vibration, optical, and particle detectors). Measurement and control. Signal conditioning and recovery. Impedance matching, amplification (Op-amp based, instrumentation amp, feedback), filtering.
and noise reduction, shielding and grounding. Fourier transforms, lock-in detector, box-car integrator, modulation techniques.

High frequency devices (including generators and detectors).

VII. Atomic & Molecular Physics


VIII. Condensed Matter Physics


IX. Nuclear and Particle Physics
