

Date: 21th January 2025

NAME OF THE POST: Assistant Professor (Grade –II) Level-10) [On Contract]

Department Name: Physics

Schedule for Reporting, written Test/Verification/Seminar/Interview

	Assistant Professors (Grade II) (level-10)	
Reporting	13 th February 2025 at 8.30 AM	<ul style="list-style-type: none">Reporting at the Venue.Submission of one set of signed application, Self-attested certificates and other essential documents.
Written Test	13 th February 2025 (9.00AM to 11.00 AM)	<ul style="list-style-type: none">Written Test (only MCQs) based on the GATE syllabus.
Verification	13 th February 2025 12:30 PM onwards	<ul style="list-style-type: none">Verification of documents for only candidates shortlisted based on the written test performance.
Seminar	13 th February 2025 from 2:00 PM onwards	<ul style="list-style-type: none">Seminar presentation for only the shortlisted candidates based on the written test performance.
Interview	14 th February 2025 from 9.00 AM onwards	<ul style="list-style-type: none">Interview only for candidates shortlisted based on Seminar performance.

Venue for Written Test/Seminar/Interview:

Written Test Venue: Manipur Public Service Commission, North AOC, Imphal West
Seminar/Interview : HOTEL IMPHAL, North AOC, Imphal West, MANIPUR

Provisionally shortlisted candidates

S.No	Application Number				
1.	R222410PY001	8.	R222410PY008	17.	R222410PY018
2.	R222410PY002	9.	R222410PY009	18.	R222410PY019
3.	R222410PY003	10.	R222410PY011	19.	R222410PY020
4.	R222410PY004	11.	R222410PY012	20.	R222410PY021
5.	R222410PY005	12.	R222410PY013	21.	R222410PY022
6.	R222410PY006	13.	R222410PY014	22.	R222410PY023
7.	R222410PY007	14.	R222410PY015	23.	R222410PY024
		15.	R222410PY016	24.	R222410PY025
		16.	R222410PY017	25.	R222410PY026

26.	R222410PY027
27.	R222410PY029
28.	R222410PY030
29.	R222410PY031
30.	R222410PY032
31.	R222410PY034

32.	R222410PY035
33.	R222410PY036
34.	R222410PY037
35.	R222410PY039
36.	R222410PY040

37.	R222410PY041
38.	R222410PY042
39.	R222410PY044
40.	R222410PY045
41.	R222410PY047

INELIGIBLE CANDIDATES

S. No.	Application No.	Reason for not Shortlisting
1.	R222410PY010	UG SECOND CLASS
2.	R222410PY028	UG SECOND CLASS
3.	R222410PY033	UG not concerned subject
4.	R222410PY038	PG SECOND CLASS
5.	R222410PY043	PG SECOND CLASS
6.	R222410PY046	UG SECOND CLASS
7.	R222410PY048	UG SECOND CLASS

Note:

- 1) Any grievance/objection w.r.t the non-eligible candidates only are to be sent through e-mail: recruit_faculty@nitmanipur.ac.in on or before January 24, 2025.
- 2) The grievance/objection sent to the above mentioned email-id within the stipulated date will **ONLY** be considered.
- 3) Correspondence sent to any other email Id of the institute will not be entertained.
- 4) Syllabus for written Test for **Assistant Professor (Grade –II) Level-10) [On Contract]** is enclosed in **Annexure I**.

Annexure I: Syllabus for Written Test:

PH	Physics
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Section 1: Mathematical Physics

Vector Calculus: Linear vector space: basis, orthogonality and completeness; matrices; similarity transformations, diagonalization, eigen values and eigen vectors; linear differential equations: second order linear differential equations and solutions involving special functions; complex analysis: Cauchy-Riemann conditions, Cauchy's theorem, singularities, residue theorem and applications; Laplace transform, Fourier analysis; elementary ideas about tensors: covariant and contravariant tensors.

Section 2: Classical Mechanics

Lagrangian Formulation: D'Alembert's principle, Euler-Lagrange equation, Hamilton's principle, calculus of variations; symmetry and conservation laws; central force motion: Kepler problem and Rutherford scattering; small oscillations: coupled oscillations and normal modes; rigid body dynamics: inertia tensor, orthogonal transformations, Euler angles, Torque free motion of a symmetric top; Hamiltonian and Hamilton's equations of motion; Liouville's theorem; canonical transformations: action-angle variables, Poisson brackets, Hamilton-Jacobi equation.

Special Theory of Relativity: Lorentz transformations, relativistic kinematics, mass-energy equivalence.

Section 3: Electromagnetic Theory

Solutions of electrostatic and magnetostatic problems including boundary value problems; method of images; separation of variables; dielectrics and conductors; magnetic materials; multipole expansion; Maxwell's equations; scalar and vector potentials; Coulomb and Lorentz gauges; electromagnetic waves in free space, non-conducting and conducting media; reflection and transmission at normal and oblique incidences; polarization of electromagnetic waves; Poynting vector, Poynting theorem, energy and momentum of electromagnetic waves; radiation from a moving charge.

Section 4: Quantum Mechanics

Postulates of quantum mechanics; uncertainty principle; Schrodinger equation; Dirac Bra-Ket notation, linear vectors and operators in Hilbert space; one dimensional potentials: step potential, finite rectangular well, tunneling from a potential barrier, particle in a box, harmonic oscillator; two and three dimensional systems: concept of degeneracy; hydrogen atom; angular momentum and spin; addition of angular momenta; variational method and WKB approximation, time independent perturbation theory; elementary scattering theory, Born approximation; symmetries in quantum mechanical systems.

Section 5: Thermodynamics and Statistical Physics

Laws of thermodynamics; macrostates and microstates; phase space; ensembles; partition function, free energy, calculation of thermodynamic quantities; classical and quantum statistics; degenerate Fermi gas; black body radiation and Planck's distribution law; Bose-Einstein condensation; first and second order phase transitions, phase equilibria, critical point.

Section 6: Atomic and Molecular Physics

Spectra of one- and many-electron atoms; spin-orbit interaction: LS and jj couplings; fine and hyperfine structures; Zeeman and Stark effects; electric dipole transitions and selection rules; rotational and vibrational spectra of diatomic molecules; electronic transitions in diatomic molecules, Franck-Condon principle; Raman effect; EPR, NMR, ESR, X-ray spectra; lasers: Einstein coefficients, population inversion, two and three level systems.

Section 7: Solid State Physics

Elements of crystallography; diffraction methods for structure determination; bonding in solids; lattice vibrations and thermal properties of solids; free electron theory; band theory of solids: nearly free electron and tight binding models; metals, semiconductors and insulators; conductivity, mobility and effective mass; Optical properties of solids; Kramer's-Kronig relation, intra- and inter-band transitions; dielectric properties of solid; dielectric function, polarizability, ferroelectricity; magnetic properties of solids; dia, para, ferro, antiferro and ferri-magnetism, domains and magnetic anisotropy; superconductivity: Type-I and Type II superconductors, Meissner effect, London equation, BCS Theory, flux quantization.

Section 8: Electronics

Semiconductors in Equilibrium: Electron and hole statistics in intrinsic and extrinsic semiconductors; metal-semiconductor junctions; Ohmic and rectifying contacts; PN diodes, bipolar junction transistors, field effect transistors; negative and positive feedback circuits; oscillators, operational amplifiers, active filters; basics of digital logic circuits, combinational and sequential circuits, flip-flops, timers, counters, registers, A/D and D/A conversion.

Section 9: Nuclear and Particle Physics

Nuclear radii and charge distributions, nuclear binding energy, electric and magnetic moments; semi-empirical mass formula; nuclear models; liquid drop model, nuclear shell model; nuclear force and two nucleon problem; alpha decay, beta-decay, electromagnetic transitions in nuclei; Rutherford scattering, nuclear reactions, conservation laws; fission and fusion; particle accelerators and detectors; elementary particles; photons, baryons, mesons and leptons; quark

model; conservation laws, isospin symmetry, charge conjugation, parity and time-reversal invariance.

Recruitment Section