

Date: 21th January 2025

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

Department Name: Mathematics

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 12.00 Noon 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	8.	R222410MA010	17.	R222410MA019
1.	R222410MA001	9.	R222410MA011	18.	R222410MA020
2.	R222410MA002	10.	R222410MA012	19.	R222410MA021
3.	R222410MA003	11.	R222410MA013	20.	R222410MA022
4.	R222410MA006	12.	R222410MA014	21.	R222410MA023
5.	R222410MA007	13.	R222410MA015	22.	R222410MA025
6.	R222410MA008	14.	R222410MA016	23.	R222410MA026
7.	R222410MA009	15.	R222410MA017	24.	R222410MA028
		16.	R222410MA018	25.	R222410MA029

26.	R222410MA030
27.	R222410MA031
28.	R222410MA032
29.	R222410MA033
30.	R222410MA034

31.	R222410MA035
32.	R222410MA036
33.	R222410MA037
34.	R222410MA038
35.	R222410MA039

36.	R222410MA040
37.	R222410MA041
38.	R222410MA042
39.	R222410MA043
40.	R222410MA046

INELIGIBLE CANDIDATES

S. No.	Application No.	Reason for not Shortlisting
1.	R222410MA004	Second class in B.Sc.
2.	R222410MA005	Second class in B.Sc.
3.	R222410MA024	Phd award certificate is required
4.	R222410MA027	Second class in B.Sc.
5.	R222410MA044	M. Sc. Marksheet and certificate not attached
6.	R222410MA045	PhD degree not awarded, only thesis submission certificate is attached

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:

MA	Mathematics
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Calculus: Functions of two or more variables, continuity, directional derivatives, partial derivatives, total derivative, maxima and minima, saddle point, method of Lagrange's multipliers; Double and Triple integrals and their applications to area, volume and surface area; Vector Calculus: gradient, divergence and curl, Line integrals and Surface integrals, Green's theorem, Stokes' theorem, and Gauss divergence theorem.

Linear Algebra: Finite dimensional vector spaces over real or complex fields; Linear transformations and their matrix representations, rank and nullity; systems of linear equations, characteristic polynomial, eigen values and eigen vectors, diagonalization, minimal polynomial, Cayley-Hamilton Theorem, Finite dimensional inner product spaces, Gram-Schmidt orthonormalization process, symmetric, skew-symmetric, Hermitian, skew-Hermitian, normal, orthogonal and unitary matrices; diagonalization by a unitary matrix, Jordan canonical form; bilinear and quadratic forms.

Real Analysis: Metric spaces, connectedness, compactness, completeness; Sequences and series of functions, uniform convergence, Ascoli-Arzelà theorem; Weierstrass approximation theorem; contraction mapping principle, Power series; Differentiation of functions of several variables, Inverse and Implicit function theorems; Lebesgue measure on the real line, measurable functions; Lebesgue integral, Fatou's lemma, monotone convergence theorem, dominated convergence theorem.

Complex Analysis: Functions of a complex variable: continuity, differentiability, analytic functions, harmonic functions; Complex integration: Cauchy's integral theorem and formula; Liouville's theorem, maximum modulus principle, Morera's theorem; zeros and singularities; Power series, radius of convergence, Taylor's series and Laurent's series; Residue theorem and applications for evaluating real integrals; Rouché's theorem, Argument principle, Schwarz lemma; Conformal mappings, Möbius transformations.

Ordinary Differential Equations: First order ordinary differential equations, existence and uniqueness theorems for initial value problems, linear ordinary differential equations of higher order with constant coefficients; Second order linear ordinary differential equations with variable coefficients; Cauchy-Euler equation, method of Laplace transforms for solving ordinary differential equations, series solutions (power series, Frobenius method); Legendre and Bessel functions and their orthogonal properties; Systems of linear first order ordinary differential equations, Sturm's oscillation and separation theorems, Sturm-Liouville eigenvalue problems, Planar autonomous systems of ordinary differential equations: Stability of stationary points for linear systems with constant coefficients, Linearized stability, Lyapunov functions.

Algebra: Groups, subgroups, normal subgroups, quotient groups, homomorphisms, automorphisms; cyclic groups, permutation groups, Group action, Sylow's theorems and their applications; Rings, ideals, prime and maximal ideals, quotient rings, unique factorization

domains, Principle ideal domains, Euclidean domains, polynomial rings, Eisenstein's irreducibility criterion; Fields, finite fields, field extensions, algebraic extensions, algebraically closed fields

Functional Analysis: Normed linear spaces, Banach spaces, Hahn-Banach theorem, open mapping and closed graph theorems, principle of uniform boundedness; Inner-product spaces, Hilbert spaces, orthonormal bases, projection theorem, Riesz representation theorem, spectral theorem for compact self-adjoint operators.

Numerical Analysis: Systems of linear equations: Direct methods (Gaussian elimination, LU decomposition, Cholesky factorization), Iterative methods (Gauss-Seidel and Jacobi) and their convergence for diagonally dominant coefficient matrices; Numerical solutions of nonlinear equations: bisection method, secant method, Newton-Raphson method, fixed point iteration; Interpolation: Lagrange and Newton forms of interpolating polynomial, Error in polynomial interpolation of a function; Numerical differentiation and error, Numerical integration: Trapezoidal and Simpson rules, Newton-Cotes integration formulas, composite rules, mathematical errors involved in numerical integration formulae; Numerical solution of initial value problems for ordinary differential equations: Methods of Euler, Runge-Kutta method of order 2.

Partial Differential Equations: Method of characteristics for first order linear and quasilinear partial differential equations; Second order partial differential equations in two independent variables: classification and canonical forms, method of separation of variables for Laplace equation in Cartesian and polar coordinates, heat and wave equations in one space variable; Wave equation: Cauchy problem and d'Alembert formula, domains of dependence and influence, non-homogeneous wave equation; Heat equation: Cauchy problem; Laplace and Fourier transform methods.

Topology: Basic concepts of topology, bases, subbases, subspace topology, order topology, product topology, quotient topology, metric topology, connectedness, compactness, countability and separation axioms, Urysohn's Lemma.

Linear Programming: Linear programming models, convex sets, extreme points; Basic feasible solution, graphical method, simplex method, two phase methods, revised simplex method; Infeasible and unbounded linear programming models, alternate optima; Duality theory, weak duality and strong duality; Balanced and unbalanced transportation problems, Initial basic feasible solution of balanced transportation problems (least cost method, north-west corner rule, Vogel's approximation method); Optimal solution, modified distribution method; Solving assignment problems, Hungarian method.