IrIS

MA Call Letter List

PhD, 2026 - 27

The following applicants have been selected for written exam and/or interview for the department for the department of Mathematical and Computational Sciences for PhD Programme. The applicants are requested to go through additional information provided in their Call letters.

#	Name	Reference Number	Branch/Specialisation
1	Rahul Varma	PH2026MA0003	Mathematical and Computational Sciences
2	Pritish Samal	PH2026MA0006	Mathematical and Computational Sciences
3	SELLIDHASAN M	PH2026MA0007	Mathematical and Computational Sciences
4	NIKITA YADAV	PH2026MA0008	Mathematical and Computational Sciences
5	Snehalata	PH2026MA0009	Mathematical and Computational Sciences
6	KASARLA OMKAR	PH2026MA0010	Mathematical and Computational Sciences
7	SOUREN GHOSH	PH2026MA0011	Mathematical and Computational Sciences
8	SHANMUGA PRIYA T	PH2026MA0012	Mathematical and Computational Sciences
9	SAUMYARANJAN DAS	PH2026MA0013	Mathematical and Computational Sciences

#	Name	Reference Number	Branch/Specialisation
10	Bibina Michael	PH2026MA0014	Mathematical and Computational Sciences
11	MD MAZHAR ALAM	PH2026MA0015	Mathematical and Computational Sciences
12	SEEMALA SANTHOSH KUMAR	PH2026MA0016	Mathematical and Computational Sciences
13	Narendran S	PH2026MA0017	Mathematical and Computational Sciences
14	BHARATH D	PH2026MA0018	Mathematical and Computational Sciences
15	K Hanmanth Naik	PH2026MA0019	Mathematical and Computational Sciences
16	ARCHANA A R	PH2026MA0020	Mathematical and Computational Sciences
17	DEEPTHI L	PH2026MA0021	Mathematical and Computational Sciences
18	SUSMITA SASMAL	PH2026MA0022	Mathematical and Computational Sciences
19	Ishika Das	PH2026MA0023	Mathematical and Computational Sciences
20	Sharon J	PH2026MA0025	Mathematical and Computational Sciences
21	DHINAKARAN T	PH2026MA0026	Mathematical and Computational Sciences

#	Name	Reference Number	Branch/Specialisation
22	Keerthana N	PH2026MA0027	Mathematical and Computational Sciences
23	Meenakshi S	PH2026MA0028	Mathematical and Computational Sciences
24	Thillai Arunthathi K	PH2026MA0029	Mathematical and Computational Sciences
25	MOHAMED AURANGASEEP H	PH2026MA0030	Mathematical and Computational Sciences
26	Vignesh R D	PH2026MA0031	Mathematical and Computational Sciences
27	Dhanush S	PH2026MA0032	Mathematical and Computational Sciences
28	MAITHILI R	PH2026MA0033	Mathematical and Computational Sciences
29	PICHUMANI M	PH2026MA0034	Mathematical and Computational Sciences
30	IDHAYA V	PH2026MA0035	Mathematical and Computational Sciences
31	GOKUL M	PH2026MA0036	Mathematical and Computational Sciences
32	Rakshitha K M	PH2026MA0037	Mathematical and Computational Sciences
33	YABEZ VISHAL GS	PH2026MA0038	Mathematical and Computational Sciences

#	Name	Reference Number	Branch/Specialisation
34	SUBHADIP GHOSH	PH2026MA0039	Mathematical and Computational Sciences
35	Sourav Sahoo	PH2026MA0040	Mathematical and Computational Sciences
36	NENAVATH NAVEEN	PH2026MA0041	Mathematical and Computational Sciences
37	Muthumani S	PH2026MA0043	Mathematical and Computational Sciences
38	Sweety Basil	PH2026MA0045	Mathematical and Computational Sciences
39	DEEKSHA C BHAT	PH2026MA0046	Mathematical and Computational Sciences
40	Kamal Krishna Sharma	PH2026MA0047	Mathematical and Computational Sciences
41	ARCHANA G	PH2026MA0048	Mathematical and Computational Sciences
42	KANAGAMANI	PH2026MA0049	Mathematical and Computational Sciences
43	Yuganisha B	PH2026MA0050	Mathematical and Computational Sciences
44	PARMATHI M	PH2026MA0051	Mathematical and Computational Sciences
45	Vennila M	PH2026MA0052	Mathematical and Computational Sciences
46	Pavithra S	PH2026MA0053	Mathematical and

#	Name	Reference Number	Branch/Specialisation
			Computational Sciences
47	Amit Samanta	PH2026MA0054	Mathematical and Computational Sciences
48	SAFIA FARHEEN S R	PH2026MA0055	Mathematical and Computational Sciences
49	Likith S V	PH2026MA0056	Mathematical and Computational Sciences
50	SURESH HEMALAPPA LAMANI	PH2026MA0057	Mathematical and Computational Sciences
51	Aruldass A	PH2026MA0059	Mathematical and Computational Sciences
52	Annapoorani S	PH2026MA0060	Mathematical and Computational Sciences
53	RAGAVI E	PH2026MA0061	Mathematical and Computational Sciences
54	SHASHANK SUNIL KHANOLKAR	PH2026MA0062	Mathematical and Computational Sciences
55	HARIRAM S	PH2026MA0063	Mathematical and Computational Sciences
56	SIDDHI RADHA	PH2026MA0064	Mathematical and Computational Sciences
57	Abir Deb	PH2026MA0065	Mathematical and Computational Sciences
58	NITIN SEMWAL	PH2026MA0066	Mathematical and

#	Name	Reference Number	Branch/Specialisation
			Computational Sciences
59	PRIYANKA VINAYAK TORASKAR	PH2026MA0067	Mathematical and Computational Sciences
60	JESVI PHILIP FERNANDIS	PH2026MA0068	Mathematical and Computational Sciences
61	Syeda Sara Mahveen	PH2026MA0069	Mathematical and Computational Sciences
62	PRABHUNANDAN PATEL	PH2026MA0070	Mathematical and Computational Sciences
63	S.Sandip Rao	PH2026MA0071	Mathematical and Computational Sciences
64	Chinmayi V Bhat	PH2026MA0072	Mathematical and Computational Sciences
65	TULJA BHAVANI S P	PH2026MA0074	Mathematical and Computational Sciences
66	Munna Prajapati	PH2026MA0075	Mathematical and Computational Sciences
67	ANKIT JATAV	PH2026MA0076	Mathematical and Computational Sciences
68	md muntazir alam	PH2026MA0077	Mathematical and Computational Sciences
69	PARTHIVKUMAR NARANBHAI BARAIYA	PH2026MA0078	Mathematical and Computational Sciences
70	Bhuvana K S	PH2026MA0079	Mathematical and Computational Sciences

#	Name	Reference Number	Branch/Specialisation
71	Nandan Padhan	PH2026MA0080	Mathematical and Computational Sciences
72	Dushyant Rajput	PH2026MA0081	Mathematical and Computational Sciences
73	Pankaj Gogoi	PH2026MA0082	Mathematical and Computational Sciences
74	KAUSTAV CHATTORAJ	PH2026MA0083	Mathematical and Computational Sciences
75	Sagar Upadhaya	PH2026MA0084	Mathematical and Computational Sciences
76	KANIKA M	PH2026MA0086	Mathematical and Computational Sciences
77	Anush Kamath	PH2026MA0087	Mathematical and Computational Sciences
78	JERALDBRITTO J	PH2026MA0088	Mathematical and Computational Sciences
79	Srijana Karmakar	PH2026MA0089	Mathematical and Computational Sciences
80	MINAL BALESH BADIGER	PH2026MA0090	Mathematical and Computational Sciences
81	ABINAYA A	PH2026MA0091	Mathematical and Computational Sciences
82	balram kumar	PH2026MA0093	Mathematical and Computational Sciences

#	Name	Reference Number	Branch/Specialisation
83	RESHMA	PH2026MA0094	Mathematical and Computational Sciences
84	Sneha Ukkali	PH2026MA0095	Mathematical and Computational Sciences
85	Sampa Mondal	PH2026MA0096	Mathematical and Computational Sciences
86	Deepika B	PH2026MA0097	Mathematical and Computational Sciences
87	Ahamed Ashick Ali A	PH2026MA0098	Mathematical and Computational Sciences
88	Athota Ronnie Kenneth	PH2026MA0099	Mathematical and Computational Sciences
89	Malvika Basavantaraya	PH2026MA0100	Mathematical and Computational Sciences
90	Anush Kamath	PH2026MA0101	Mathematical and Computational Sciences
91	AMATYA CHATTARAJ	PH2026MA0102	Mathematical and Computational Sciences
92	GULSHAN KUMAR RAM	PH2026MA0103	Mathematical and Computational Sciences

11/5/26

Head Of Department
Mathematical and Computational Sciences

विभागाध्यक्ष / H.O.D.
ग. एवं प. वि. विभाग / Dept. of MACS
राष्ट्रीय प्रौद्योगिकी संस्थान कर्नाटक
National Institute of Technology Karnataka
P.O Srinivasnagar/Surathkal Mangaluru-575025

Syllabus for Written Test
(Stream- Computational Science)

Probability and Statistics: Random variables, Uniform, normal, exponential, Poisson and binomial distributions. Mean, median, mode, and standard deviation. Conditional probability and Bayes theorem.

Linear Algebra: Vector space, subspaces, linear dependence and independence of vectors, matrices, projection matrix, orthogonal matrix, idempotent matrix, partition matrix and their properties, quadratic forms, systems of linear equations and solutions; Gaussian elimination, eigenvalues and eigenvectors, determinant, rank, nullity, projections, LU decomposition, singular value decomposition.

Calculus and Optimization: Functions of a single variable, limit, continuity and differentiability, Taylor series, maxima and minima, optimization involving a single variable.

Programming, Data Structures, and Algorithms: Programming in Python, basic data structures: stacks, queues, linked lists, trees, hash tables; Search algorithms: linear search and binary search, basic sorting algorithms: selection sort, bubble sort, and insertion sort; divide and conquer: mergesort, quicksort; introduction to graph theory; basic graph algorithms: traversals and shortest path. Algorithm design techniques: greedy, dynamic programming, and divide-and-conquer. Time and space complexity of algorithms.

Theory of Computation: Regular expressions and finite automata. Context-free grammars and push-down automata. Regular and context-free languages, pumping lemma. Turing machines and undecidability.

Database Management: ER-model. Relational model: relational algebra, tuple calculus, SQL. Integrity constraints, normal forms. File organization, indexing (e.g., B and B+ trees). Transactions and concurrency control.

Computer Networks: Concept of layering: OSI and TCP/IP Protocol Stacks; Basics of packet, circuit, and virtual circuit-switching; Data link layer: framing, error detection, Medium Access Control, Ethernet bridging; Routing protocols: shortest path, flooding, distance vector and link state routing; Fragmentation and IP addressing, IPv4, CIDR notation, Basics of IP support protocols (ARP, DHCP, ICMP), Network Address Translation (NAT); Transport layer: flow control and congestion control, UDP, TCP, sockets; Application layer protocols: DNS, SMTP, HTTP, FTP, Email.

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कर्नाटक, भारत / Karnataka, India

Syllabus for Written Test

(Stream-Mathematics)

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-Arzela 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; Rouche's theorem, Argument principle, Schwarz lemma; Conformal mappings, Mobius 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.

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Syllabus for Written Test

(Stream-Statistics)

Calculus: Finite, countable and uncountable sets; Real number system as a complete ordered field, Archimedean property; Sequences of real numbers, convergence of sequences, bounded sequences, monotonic sequences, Cauchy criterion for convergence; Series of real numbers, convergence, tests of convergence, alternating series, absolute and conditional convergence; Power series and radius of convergence; Functions of a real variable: Limit, continuity, monotone functions, uniform continuity, differentiability, Rolle's theorem, mean value theorems, Taylor's theorem, L'Hospital rules, maxima and minima, Riemann integration and its properties, improper integrals; Functions of several real variables: Limit, continuity, partial derivatives, directional derivatives, gradient, Taylor's theorem, total derivative, maxima and minima, saddle point, method of Lagrange multipliers, double and triple integrals and their applications.

Matrix Theory: Subspaces of $\mathbb{R}^n$ and $\mathbb{C}^n$, span, linear independence, basis and dimension, row space and column space of a matrix, rank and nullity, row reduced echelon form, trace and determinant, inverse of a matrix, systems of linear equations; Inner products in $\mathbb{R}^n$ and $\mathbb{C}^n$, Gram-Schmidt orthonormalization; Eigen values and eigen vectors, characteristic polynomial, Cayley-Hamilton theorem, symmetric, skew-symmetric, Hermitian, skew-Hermitian, orthogonal, unitary matrices and their eigen values, change of basis matrix, equivalence and similarity, diagonalizability, positive definite and positive semi-definite matrices and their properties, quadratic forms, singular value decomposition.

Probability: Axiomatic definition of probability, properties of probability function, conditional probability, Bayes' theorem, independence of events; Random variables and their distributions, distribution function, probability mass function, probability density function and their properties, expectation, moments and moment generating function, quantiles, distribution of functions of a random variable, Chebyshev, Markov and Jensen inequalities.

Standard Discrete and Continuous Univariate Distributions: Bernoulli, binomial, geometric, negative binomial, hypergeometric, discrete uniform, Poisson, continuous uniform, exponential, gamma, beta, Weibull, normal.

Jointly distributed random variables and their distribution functions, probability mass function, probability density function and their properties, marginal and conditional distributions, conditional expectation and moments, product moments, simple correlation coefficient, joint moment generating function, independence of random variables, functions of random vector and their distributions, distributions of order statistics, joint and marginal distributions of order statistics; multinomial distribution, bivariate normal distribution, sampling distributions: central, chi-square, central t, and central F distributions.

Convergence in distribution, convergence in probability, convergence almost surely, convergence in r-th mean and their inter-relations, Slutsky's lemma, Borel-Cantelli lemma; weak and strong laws of large numbers; central limit theorem for i.i.d. random variables, delta method.

Stochastic Processes: Markov chains with finite and countable state space, classification of states, limiting behaviour of n-step transition probabilities, stationary distribution, Poisson process, birth-and-death process, pure-birth process, pure-death process, Brownian motion and its basic properties.

Estimation: Sufficiency, minimal sufficiency, factorization theorem, completeness, completeness of exponential families, ancillary statistic, Basu's theorem and its applications, unbiased estimation, uniformly minimum variance unbiased estimation, Rao-Blackwell theorem, Lehmann-Scheffe theorem, Cramer-Rao inequality, consistent estimators, method of moments estimators, method of maximum likelihood estimators and their properties; Interval estimation: pivotal quantities and confidence intervals based on them, coverage probability.

Testing of Hypotheses: Neyman-Pearson lemma, most powerful tests, monotone likelihood ratio (MLR) property, uniformly most powerful tests, uniformly most powerful tests for families having MLR property, uniformly most powerful unbiased tests, uniformly most powerful unbiased tests for exponential families, likelihood ratio tests, large sample tests.

Non-parametric Statistics: Empirical distribution function and its properties, goodness of fit tests, chi-square test, Kolmogorov-Smirnov test, sign test, Wilcoxon signed rank test, Mann-Whitney U-test, rank correlation coefficients of Spearman and Kendall.

Multivariate Analysis: Multivariate normal distribution: properties, conditional and marginal distributions, maximum likelihood estimation of mean vector and dispersion matrix, Hotelling's T^2 test, Wishart distribution and its basic properties, multiple and partial correlation coefficients and their basic properties.

Regression Analysis: Simple and multiple linear regression, R^2 and adjusted R^2 and their applications, distributions of quadratic forms of random vectors: Fisher-Cochran theorem, Gauss-Markov theorem, tests for regression coefficients, confidence intervals.

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कर्नाटक, भारत / Karnataka, India