NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL
राष्ट्रीय प्रौद्योगिकी संस्थान कर्नाटक, सुरत्कल
P.O SRINIVASNAGAR, MANGALORE - 575025

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MA Call Letter List

M Tech. (Research), 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 M Tech. (Research) Programme. The applicants are requested to go through additional information provided in their Call letters.

#	Name	Reference Number	Branch/Specialisation
1	Apoorva Srivastava	MTR2026CD0056	Computational and Data Science
2	RAJAGOPAL K NAIR	MTR2026CD0049	Computational and Data Science
3	KOTI SAI GANESH	MTR2026CD0047	Computational and Data Science
4	Liyana Sherin	MTR2026CD0048	Computational and Data Science
5	Milind Pruthi	MTR2026CD0055	Computational and Data Science
6	Rohit Sanger	MTR2026CD0053	Computational and Data Science
7	Penala Adithya Rai	MTR2026CD0051	Computational and Data Science

11/11/26

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
सुरत्कल, मंगलूरु-५७५०२५/Surathkal, Mangaluru-575025
कर्नाटक, भारत / Karnataka, India

Dean Academics

Department of Mathematical and Computational Sciences

National Institute of Technology Karnataka, Surathkal

M.Tech (R) 2026-2027

Written Test Syllabus

Probability and Statistics: Counting (permutation and combinations), probability axioms, Sample space, events, independent events, mutually exclusive events, marginal, conditional and joint probability, Bayes Theorem, conditional expectation and variance, mean, median, mode and standard deviation, correlation, and covariance, random variables, discrete random variables and probability mass functions, uniform, Bernoulli, binomial distribution, Continuous random variables and probability distribution function, uniform, exponential, Poisson, normal, standard normal, t-distribution, chi-squared distributions, cumulative distribution function, Conditional PDF, Central limit theorem, confidence interval, z-test, t-test, chi-squared test.

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.

Database Management and Warehousing: ER-model, relational model: relational algebra, tuple calculus, SQL, integrity constraints, normal form, file organization, indexing, data types, data transformation such as normalization, discretization, sampling, compression; data warehouse modelling: schema for multidimensional data models, concept hierarchies, measures: categorization and computations.

Machine Learning: (i) Supervised Learning: regression and classification problems, simple linear regression, multiple linear regression, ridge regression, logistic regression, k-nearest neighbour, naive Bayes classifier, linear discriminant analysis, support vector machine, decision trees, bias-variance trade-off, cross-validation methods such as leave-one-out (LOO) cross-validation, k-folds cross-validation, multi-layer perceptron, feed-forward neural network; (ii) Unsupervised Learning: clustering algorithms, k-means/k-medoid, hierarchical clustering, top-down, bottom-up: single-linkage, multiple-linkage, dimensionality reduction, principal component analysis.

AI: Search: informed, uninformed, adversarial; logic, propositional, predicate; reasoning under uncertainty topics — conditional independence representation, exact inference through variable elimination, and approximate inference through sampling.

11/11/26

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