

DEPARTMENT OF WATER RESOURCES & OCEAN ENGINEERING

(Formerly Dept. of Applied Mechanics & Hydraulics)

NITK, SURATHKAL, MANGALORE, PIN-575025

Applicants called for M.Tech (Research) – Written Test and Interview for the year 2023-24

Sl. No	Reference No	Name of the Applicants
1	MTR2023GF0003	Katkar Rushikesh Mahesh
2	MTR2023MS0002	Shilpa C P
3	MT2023WO0002	Harshavardhana

Varija K
29.5.23

HEAD OF THE DEPARTMENT
PROFESSOR & HEAD

Dept. of Water Resources & Ocean Engineering
(Formerly Dept. of Applied Mechanics & Hydraulics)
NITK Surathkal, P.O. Srinivasa Nagar, Mangaluru-575025

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NITK, Surathkal, Mangaluru - 575 025

General Instructions for the candidates who are appearing for the

M.Tech. (R/S) Written Aptitude Test & Interview:

1. Syllabus for the written aptitude test is provided in annexure.
2. Mode of the written aptitude test is offline. Details of examination will be announced in our Institute's Website (<https://www.nitk.ac.in/>). For any further updates, the candidates are requested to visit our Institute's Website regularly.
3. There will be 30 multiple choice questions (MCQ) for the M.Tech. (R/S) Written Aptitude Test. For every question, four options will be given. The candidates are expected to select correct option.
4. Each correct answer carries one mark. Total marks for the test is 30.
5. There is negative marking for wrong answer. For each wrong answer, 0.25 marks will be deducted.
6. Time duration is 60 minutes.
7. The candidates are allowed to use scientific calculators for solving numerical problems.
8. After the written test, shortlisted candidates will be allowed to attend the M.Tech. (R/S) interview.
9. **Written Test Date and Time:** 19th June 2023, 8.30 AM onwards. **No extra time will be given.**
10. **Interview Date and Time:** 19th June 2023, 10.00 AM onwards.

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29/5/23

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Annexure

Syllabus for the M.Tech. (R/S) Written Aptitude Test

Engineering Mechanics: System of Forces, Free-Body Diagrams, Equilibrium Equations; Internal Forces in Structures; Plane Truss, Second Area Moment.

Solid Mechanics: Bending Moment and Shear Force in Statically Determinate Beams; Simple Stress and Strain Relationships; Simple Bending Theory, Flexural and Shear Stresses, Uniform Torsion, Buckling of Column.

Fluid Mechanics: Properties of Fluids, Fluid Statics; Continuity, Momentum, Energy and Corresponding Equations; Potential Flow, Applications of Momentum and Energy Equations; Laminar and Turbulent Flow; Flow in Pipes, Pipe Networks; Concept of Boundary Layer and its Growth.

Numerical Methods: Accuracy and Precision; Error Analysis. Numerical Solutions of Linear and Non-Linear Algebraic Equations; Least Square Approximation, Newton's and Lagrange Polynomials, Numerical Differentiation, Integration by Trapezoidal and Simpson's rule, Single and Multi-Step Methods for First Order Differential Equations.

Calculus: Functions of Single Variable; Limit, Continuity and Differentiability; Mean Value Theorems, Local Maxima and Minima.

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