

DEPARTMENT OF MECHANICAL ENGINEERING

ROBOTICS AND MECHATRONICS

Syllabus for both M.S(R) & Ph.D written test/ Interview- Aug 2023 Notification

Engineering Mathematics:

Linear Algebra: Algebra of matrices; Inverse and rank of a matrix; System of linear equations; Symmetric, skew-symmetric and orthogonal matrices; Determinants; Eigenvalues and eigenvectors; Diagonalisation of matrices; Cayley-Hamilton Theorem.

Calculus: Functions of single variable, limit, continuity and differentiability, mean value theorems, indeterminate forms; partial derivatives, total derivative, Taylor series (in one and two variables), maxima and minima. Evaluation of definite and indefinite integrals; Applications of integrals to evaluate areas and volumes, Double and triple integrals, and their applications.

Vector Calculus: Gradient, divergence, and curl; applications of these concepts in engineering analyses.

Ordinary Differential Equations: First order equations(linear and non-linear); Second order linear differential equations with variable coefficients.

Syllabus for Written Test:

Engineering Mathematics(Above syllabus)& General Aptitude.

Syllabus for Interview:

Engineering Mathematics(Above syllabus) & fundamentals from the candidate's UG/PG discipline/coursework.