

Gujarat PG CET 2025 Environment Engineering (EN) Syllabus PDF

ENGINEERING MATHEMATICS

Linear Algebra: Matrix algebra, Systems of linear equations, Eigen values and eigenvectors.

Calculus: Functions of single variable, Limit, continuity and differentiability, Mean value theorems, Evaluation of definite and improper integrals, Partial derivatives, Total derivative, Maxima and minima, Gradient, Divergence and Curl, Vector identities, Directional derivatives, Line, Surface and Volume integrals, Stokes, Gauss and Green's theorems.

Differential equations: First order equations (linear and nonlinear), Higher order linear differential equations with constant coefficients, Cauchy's and Euler's equations, Initial and boundary value problems, Laplace transforms, Solutions of one dimensional heat and wave equations and Laplace equation.

Complex variables: Analytic functions, Cauchy's integral theorem, Taylor and Laurent series. Probability and Statistics: Definitions of probability and sampling theorems, Conditional probability, Mean, median, mode and standard deviation, Random variables, Poisson, Normal and Binomial distributions.

Numerical Methods: Numerical solutions of linear and non-linear algebraic equations Integration by trapezoidal and Simpson's rule single and multi-step methods for differential equations.

ENVIRONMENTAL ENGINEERING

Gravimetric analysis, titrimetric analysis and instrumental analysis: Significance of pH, Solids, Acidity, Alkalinity, COD, DO, BOD, Hardness, Sulphate, Fluoride, Chloride, Turbidity, spectrophotometry, colorimetry, chromatography.

Water supply & sewage system: Design of water distribution system, design of sewage collection system, sources of water & its quality.

Water & Wastewater treatment: Primary, secondary & tertiary treatment, screens, grit chamber, coagulation, flocculation, sedimentation, biological treatments of wastewater (aerobic & anaerobic), adsorption, disinfection, filtration, water softening, reverse osmosis, ion exchange method, sludge treatment & disposal.

Air pollution: Sources & effects of air pollutants, criteria air pollutants, effects of meteorological parameters on ambient air quality, thermal inversion, control of particulates, Ambient Air quality Standards & limits.

Noise Pollution: Noise as a pollutant, measurement of noise, units of expressions, effects of noise, permissible limits.

Environmental Impact Assessment & Legislation: Sustainable Development, EIA as a four step activity, Need for EIA, EIA Notification 2006& its requirement, EPA 1986, Water Act 1974, Air Act 1986 Hazardous Waste Management Rules , Environmental Audit.

Industrial Water Pollution: Principles of water pollution control-Reduction of strength & volume, Neutralization, Equalization, Discharge standards, Effluent Standards, Stream Standards, Effluent Quality and treatment flow sheet for dairy industry, textile process house and distillery.

Municipal solid waste management: Municipal solid waste characteristic, Quantities, composition and generation, engineered system for solid waste management, secured landfill site, energy recovery.
