

**ENGINEERING MATHEMATICS TEST SERIES**

**GATE 2019 SCHEDULE: CIVIL ENGINEERING**

Test Date	Test Type	Syllabus [ EM- Engineering Mathematics]	No. of Question	Marks	Duration
30/07/2018	EM: Minor Test- 1	<b>LINEAR ALGEBRA:</b> Matrix algebra; Systems of linear equations; Eigen values and Eigen vectors. <b>CALCULUS:</b> Functions of single variable, limit, continuity and differentiability.	33	50	90 min
30/08/2018	EM: Minor Test- 2	<b>CALCULUS:</b> Mean value theorems, local maxima and minima, Taylor and Maclaurin series; Evaluation of definite and indefinite integrals, application of definite integral to obtain area and volume; Partial derivatives; Total derivative; Gradient, Divergence and Curl, Vector identities, Directional derivatives, Line, Surface and Volume integrals, Stokes, Gauss and Green's theorems.	33	50	90 min
29/09/2018	EM: Minor Test- 3	<b>ORDINARY DIFFERENTIAL EQUATION (ODE):</b> First order (linear and non-linear) equations; higher order linear equations with constant coefficients; Euler-Cauchy equations; Laplace transform and its application in solving linear ODEs; initial and boundary value problems. <b>PARTIAL DIFFERENTIAL EQUATION (PDE):</b> Fourier series; separation of variables; solutions of one-dimensional diffusion equation; first and second order one-dimensional wave equation and two-dimensional Laplace equation.	33	50	90 min
30/10/2018	EM: Minor Test- 4	<b>NUMERICAL METHODS:</b> 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.	33	50	90 min
30/11/2018	EM: Minor Test- 5	<b>PROBABILITY AND STATISTICS:</b> Definitions of probability and sampling theorems; Conditional probability; Discrete Random variables: Poisson and Binomial distributions; Continuous random variables: normal and exponential distributions; Descriptive statistics - Mean, median, mode and standard deviation; Hypothesis testing.	33	50	90 min