ACE
Engineering Academy
(Leading institute for ESE/GATE/PSUs)

GATE - 2018
ONLINE TEST SERIES

CIVIL ENGINEERING (CE)

No. of Tests : 62

Chapter / Topic wise Tests	20
Subject Wise / Multi Subject Grand Tests	30
Full Length Mock Tests	12

TEST SERIES HIGHLIGHTS

- ★ All India Rank will be given for each test.
- ★ Test wise and overall statistics.
- ★ Comparison with toppers.
- ★ Question wise and test wise time analysis & comparison with toppers on time management.

Division of Subjects into Various Topics

Subject & Code	Topic Code	Topic/Chapter
Engineering Mechanics **Subject code: GMC**	GMC-1	System of forces, free-body diagrams, equilibrium equations; Internal forces in structures; Friction and its applications; Kinematics of point mass and rigid body; Centre of mass; Euler's equations of motion; Impulse-momentum; Energy methods; Principles of virtual work.
Strength of Materials (or) Solid Mechanics **Subject code: GSM**	GSM-1	Simple stress and strain relationships, Complex Stresses and Strains, Bending moment and shear force in statically determinate beams; Deflections & Slopes, buckling of column, combined and direct bending stresses
	GSM-2	Simple bending theory, flexural and shear stresses, shear centre; Uniform torsion, Moment of Inertia, Theories of Failures.
Structural Analysis **Subject code: GSA**	GSA-1	Statically determinate and indeterminate structures by force/ energy methods; Method of superposition; Analysis of trusses, Arches, cables.
	GSA-2	Beams, and frames; Displacement methods: Slope deflection and moment distribution methods; Influence lines; Stiffness and flexibility methods of structural analysis.
Construction Materials & Management **Subject code: GCM**	GCM-1	Construction materials: Construction Materials: Structural steel - composition, material properties and behaviour; Concrete - constituents, mix design, short-term and long-term properties; Bricks and mortar; Timber; Bitumen.
	GCM-2	Construction Management: Types of projects, Tendering & Contracts, Rate analysis, standard specifications, Cost Estimation, Project planning and Network Analysis – PERT and CPM
Reinforced Cement Concrete **Subject code: GCS**	GCS-1	Working stress, Limit state and Ultimate load design concepts; Design of beams; Shear; Bond and development length;
	GCS-2	Slabs, columns; Footing, Limit State of Serviceability; Prestressed concrete; Analysis of beam sections at transfer and service loads.

Subject & Code	Topic Code	Topic/Chapter
Steel Structures **Subject code: GSS**	GSS-1	Rivetted, bolted, Welded and Eccentric Connections, Tension & Compression Members, Column Bases & Column Splices
	GSS-2	Plastic theory, Beams, Plate Girder, Gantry Girders & Roof Trusses
Geotechnical Engineering **Subject code: GGT**	GGT-1	Origin of soils, soil structure and fabric; Three-phase system and phase relationships, index properties; Unified and Indian standard soil classification system; Permeability - one dimensional flow, Darcy's law; Seepage through soils - two-dimensional flow, flow nets, uplift pressure, piping; Principle of effective stress, capillarity, seepage force and quicksand condition.
	GGT-2	Compaction in laboratory and field conditions; Onedimensional consolidation, time rate of consolidation; Mohr's circle, stress paths, effective and total shear strength parameters, characteristics of clays and sand. Foundation Engineering: Sub-surface investigations - scope, drilling bore holes, sampling, plate load test, standard penetration and cone penetration tests; Earth pressure theories - Rankine and Coulomb; Stability of slopes - finite and infinite slopes, method of slices and Bishop's method; Stress distribution in soils - Boussinesq's and Westergaard's theories, pressure bulbs; Shallow foundations - Terzaghi's and Meyerhoff's bearing capacity theories, effect of water table; Combined footing and raft foundation; Contact pressure; Settlement analysis in sands and clays; Deep foundations - types of piles, dynamic and static formulae, load capacity of piles in sands and clays, pile load test, negative skin friction.

Subject & Code	Topic Code	Topic/Chapter
Fluid Mechanics **Subject code: GFM**	GFM-1	Properties of fluids, fluid statics; Forces on immersed bodies; Continuity, momentum, energy and corresponding equations; Potential flow, applications of momentum and energy equations; Flow measurement in channels and pipes; Laminar and turbulent flow; Flow in pipes, pipe networks; Concept of boundary layer and its growth.
	GFM-2	Dimensional analysis and hydraulic similitude; Kinematics of flow, velocity triangles; Basics of hydraulic machines, specific speed of pumps and turbines; Channel Hydraulics - Energy-depth relationships, specific energy, critical flow, slope profile, hydraulic jump, uniform flow and gradually varied flow
Hydrology & Irrigation **Subject code: GHI**	GHI-1	Hydrologic cycle, precipitation, evaporation, evapo-transpiration, watershed, infiltration, unit hydrographs, hydrograph analysis, flood estimation and routing, reservoir capacity, reservoir and channel routing, surface run-off models, ground water hydrology - steady state well hydraulics and aquifers; Application of Darcy's law.
	GHI-2	Duty, delta, estimation of evapo-transpiration; Crop water requirements; Design of lined and unlined canals, head works, gravity dams and spillways; Design of weirs on permeable foundation; Types of irrigation systems, irrigation methods; Water logging and drainage; Canal regulatory works, cross-drainage structures, outlets and escapes.

Subject & Code	Topic Code	Topic/Chapter
Environmental engineering **Subject code: GEE**	GEE-1	Quality standards, basic unit processes and operations for water treatment. Drinking water standards, water requirements, basic unit operations and unit processes for surface water treatment, distribution of water.
	GEE-2	Sewage and sewerage treatment, quantity and characteristics of wastewater. Primary, secondary and tertiary treatment of wastewater, effluent discharge standards. Domestic wastewater treatment, quantity of characteristics of domestic wastewater, primary and secondary treatment. Unit operations and unit processes of domestic wastewater, sludge disposal. Air Pollution: Types of pollutants, their sources and impacts, air pollution meteorology, air pollution control, air quality standards and limits. Municipal Solid Wastes: Characteristics, generation, collection and transportation of solid wastes, engineered systems for solid waste management (reuse/ recycle, energy recovery, treatment and disposal). Noise Pollution: Impacts of noise, permissible limits of noise pollution, measurement of noise and control of noise pollution.
Transportation Engineering **Subject code: GTE**	GTE-1	Highway alignment and engineering surveys; Geometric design of highways - cross-sectional elements, sight distances, horizontal and vertical alignments; Highway materials - desirable properties and quality control tests; Design of bituminous paving mixes. Geometric design of railway track; Airport runway length, taxiway and exit taxiway design.
	GTE-2	Design factors for flexible and rigid pavements; Design of flexible pavement using IRC: 37-2012; Design of rigid pavements using IRC: 58-2011; Distresses in concrete pavements. Traffic Engineering: Traffic studies on flow, speed, travel time - delay and O-D study, PCU, peak hour factor, parking study, accident study and analysis, statistical analysis of traffic data; Microscopic and macroscopic parameters of traffic flow, fundamental relationships; Control devices, signal design by Webster's method; Types of intersections and channelization . Highway capacity and level of service of rural highways and urban roads.

Subject & Code	Topic Code	Topic/Chapter
Geomatics Engg. (Surveying) **Subject code: GGE**	GGE-1	Errors and their adjustment; Maps - scale, coordinate system; Distance and angle measurement - Levelling and trigonometric levelling; Traversing survey; Contours; Areas and volumes.
	GGE-2	Triangulation survey; Total station; Horizontal and vertical curves. Photogrammetry - scale, flying height; Remote sensing - basics, platform and sensors, visual image interpretation; Basics of Geographical information system (GIS) and Geographical Positioning system (GPS).
Engineering Mathematics **Subject code: GEM**	GEM	Linear Algebra: Matrix algebra; Systems of linear equations; Eigen values and Eigen vectors. Calculus: Functions of single variable; Limit, continuity and differentiability; 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. Ordinary Differential Equation (ODE): 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. Partial Differential Equation (PDE): Fourier series; separation of variables; solutions of onedimensional diffusion equation; first and second order one-dimensional wave equation and two-dimensional Laplace equation. Probability and Statistics: 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. 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.
General Aptitude **Subject code: GGA**	GVA	English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.
	GNA	Numerical computation, numerical estimation, numerical reasoning and data interpretation.

Topic/Chapter-wise Tests

Each test carries 25 marks and 45 minutes duration

Test consists of 5 one mark questions and 10 two marks questions

Commences from 10th June, 2017 onwards, the detailed test schedule is as follows:

Tests will be activated at 2:00 pm on scheduled day

Test No	Topic codes	Date of Activation
CE-01	GMC –1	10.06.2017
CE-02	GSM – 1	14.06.2017
CE-03	GSM – 2	17.06.2017
CE-04	GFM – 1	20.06.2017
CE-05	GFM – 2	23.06.2017
CE-06	GGT – 1	26.06.2017
CE-07	GGT – 2	29.06.2017
CE-08	GCS – 1 & GSS –1	02.07.2017
CE-09	GCS – 2 & GSS –2	05.07.2017
CE-10	GSA – 1	08.07.2017
CE-11	GSA – 2	12.07.2017
CE-12	GHI – 1	15.07.2017
CE-13	GHI – 2	18.07.2017
CE-14	GEE – 1	21.07.2017
CE-15	GEE –2	24.07.2017
CE-16	GTE – 1 & GGE–1	27.07.2017
CE-17	GTE–2 & GGE –2	30.07.2017
CE-18	GCM – 1 &GCM –2	02.08.2017
CE-19	GEM	05.08.2017
CE-20	GVA & GNA	08.08.2017

Subject-wise Grand Tests- 1st Series

Each test carries 50 marks and 90 minutes duration.

Test consists of 10 one mark questions and 20 two marks questions

Commences from 11th August, 2017 onwards, the detailed test schedule is as follows:

Test No	Subject codes	Date of Activation
CE-21	GHI	11.08.2017
CE-22	GSA	14.08.2017
CE-23	GCM	18.08.2017
CE-24	GMC & GSM	21.08.2017
CE-25	GGT	24.08.2017
CE-26	GFM	28.08.2017
CE-27	GCS & GSS	31.08.2017
CE-28	GEE	03.09.2017
CE-29	GTE	07.09.2017
CE-30	GGE	10.09.2017
CE-31	GEM	11.09.2017
CE-32	GGA	12.09.2017

Full Length Mock GATE -1st Series

As per GATE Pattern

Each test carries 100 marks and 3 hours duration.

Commences from 14th September, 2017 onwards, the detailed test schedule is as follows:

Test No	Mock GATE codes	Date of Activation
CE-33	Mock – 1	14.09.2017
CE-34	Mock – 2	17.09.2017
CE-35	Mock – 3	20.09.2017

Subject-wise Grand Tests- 2nd Series

Each test carries 50 marks and 90 minutes duration.

Test consists of 10 one mark questions and 20 two marks questions

Commences from 23rd September, 2017 onwards, the detailed test schedule is as follows:

Test No	Subject codes	Date of Activation
CE-36	GHI	23.09.2017
CE-37	GCM	26.09.2017
CE-38	GMC & GSM	03.10.2017
CE-39	GCS & GSS	06.10.2017
CE-40	GFM	09.10.2017
CE-41	GGT	12.10.2017
CE-42	GSA	15.10.2017
CE-43	GEE	19.10.2017
CE-44	GTE	22.10.2017
CE-45	GGE	25.10.2017
CE-46	GEM	26.10.2017
CE-47	GGA	27.10.2017

Full Length Mock GATE -2nd Series

As per GATE Pattern

Each test carries 100 marks and 3 hours duration.

Commences from 30th October, 2017 onwards, the detailed test schedule is as follows:

Test No	Mock GATE codes	Date of Activation
CE-48	Mock – 4	30.10.2017
CE-49	Mock – 5	07.11.2017
CE-50	Mock – 6	14.11.2017

Multi Subject Grand Tests

Each test carries 50 marks and 90 minutes duration.

Test consists of 10 one mark questions and 20 two marks questions

Commences from 19th November , 2017 onwards, the detailed test schedule is as follows:

Test No	Subjects Codes	Date of Activation
CE-51	GMC, GSM, GSA	19.11.2017
CE-52	GGT, GFM	23.11.2017
CE-53	GCM, GCS, GSS	28.11.2017
CE-54	GHI, GEE	02.12.2017
CE-55	GTE, GGE	07.12.2017
CE-56	GEM, GGA	11.12.2017

Full Length Mock GATE -3rd Series

As per GATE Pattern

Each test carries 100 marks and 3 hours duration.

Commences from 20th December, 2017 onwards, the detailed test schedule is as follows:

Test No	Mock GATE codes	Date of Activation
CE-57	Mock – 7	20.12.2017
CE-58	Mock – 8	27.12.2017
CE-59	Mock – 9	03.01.2018
CE-60	Mock – 10	11.01.2018
CE-61	Mock – 11	19.01.2018
CE-62	Mock – 12	26.01.2018

NOTE: The Dates of above MOCK GATE Exams may Change according to the GATE – 2018 Exam schedule.