

## Topicwise Tests

Test No.	Test Syllabus	No. of Ques.	Marks	Time	Activation Date
1	<b>Solid Mechanics-1:</b> Bending moment and shear force in statically determinate beams; Simple stress and strain relationships; Theories of failures.	17	25	45 min	Activated
2	<b>Solid Mechanics-2:</b> Simple bending theory, flexural and shear stresses, shear centre; Uniform torsion, buckling of column, combined and direct bending stresses.	17	25	45 min	
3	<b>Concrete Structures-1:</b> Working stress, Limit state and Ultimate load design concepts; Design of beams, slabs.	17	25	45 min	
4	<b>Concrete Structures-2:</b> Columns; Bond and development length; Prestressed concrete; Analysis of beam sections at transfer and service loads.	17	25	45 min	
5	<b>Environmental Engg.-1:</b> Water : 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. <i>Air Pollution:</i> Types of pollutants, their sources and impacts, air pollution meteorology, air pollution control, air quality standards and limits. <i>Noise Pollution:</i> Impacts of noise, permissible limits of noise pollution, measurement of noise and control of noise pollution.	17	25	45 min	
6	<b>Environmental Engg.-2:</b> Waste water: 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. <i>Municipal Solid Wastes:</i> Characteristics, generation, collection and transportation of solid wastes, engineered systems for solid waste management (reuse/ recycle, energy recovery, treatment and disposal).	17	25	45 min	
7	<b>Fluid Mechanics and Hydraulics-1:</b> 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. Dimensional analysis and hydraulic similitude.	17	25	45 min	
8	<b>Fluid Mechanics and Hydraulics-2 :</b> Forces on immersed bodies; Flow measurement in channels and pipes; 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.	17	25	45 min	
9	<b>Engineering Mathematics-1:</b> Linear Algebra, Calculus, Probability and Statistics.	17	25	45 min	
10	<b>Engineering Mathematics-2:</b> Ordinary Differential Equations, Partial Differential Equations, Numerical Methods.	17	25	45 min	
11	<b>General Aptitude-1:</b> Numerical Ability: Numerical computation, numerical estimation, numerical reasoning and data interpretation.	17	25	45 min	
12	<b>General Aptitude-2:</b> Verbal Ability: English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.	17	25	45 min	
13	<b>Transportation Engg. and Geomatics Engg.-1:</b> Highway alignment and engineering surveys; Geometric design of highways - cross-sectional elements, sight distances, horizontal and vertical alignments; Geometric design of railway track; Airport runway length, taxiway and exit taxiway design. <i>Photogrammetry</i> - scale, flying height; Remote sensing - basics, platform and sensors, visual image interpretation; Basics of Geographical information system (GIS) and Geographical Positioning system (GPS).	17	25	45 min	Activated
14	<b>Transportation Engg. and Geomatics Engg.-2:</b> <i>Highway Pavements:</i> Highway materials-desirable properties and quality control tests; Design of bituminous paving mixes; 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. <i>Traffic Engineering:</i> 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. <i>Principles of surveying:</i> Errors and their adjustment; Maps-scale, coordinate system; Distance and angle measurement - Levelling and trigonometric levelling; Traversing and triangulation survey; Total station; Horizontal and vertical curves.	17	25	45 min	
15	<b>Structural Analysis-1:</b> Statically determinate and indeterminate structures by force/ energy methods; Method of superposition; Analysis of trusses, arches, beams, cables and frames.	17	25	45 min	
16	<b>Structural Analysis-2:</b> Displacement methods: Slope deflection and moment distribution methods; Influence lines; Stiffness and flexibility methods of structural analysis.	17	25	45 min	
17	<b>Geotechnical Engg.-1:</b> 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; Compaction in laboratory and field conditions; One-dimensional consolidation, time rate of consolidation.	17	25	45 min	
18	<b>Geotechnical Engg.-2:</b> Mohr's circle, stress paths, effective and total shear strength parameters, characteristics of clays and sand. <i>Foundation Engineering:</i> 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.	17	25	45 min	
19	<b>Geotechnical Engg.-3:</b> 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.	17	25	45 min	
20	<b>Steel Structures-1:</b> Working stress and Limit state design concepts; Design of tension and compression members, Plastic analysis of beams and frames.	17	25	45 min	
21	<b>Steel Structures-2:</b> Plate girders and trusses; beams and beam- columns, column bases; Connections - simple and eccentric, beam-column connections.	17	25	45 min	
22	<b>Hydrology :</b> 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.	17	25	45 min	
23	<b>Irrigation:</b> 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.	17	25	45 min	
24	<b>Engineering Mechanics, Construction Materials and Management:</b> 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. <i>Construction Materials:</i> Structural steel - composition, material properties and behaviour; Concrete - constituents, mix design, short-term and long-term properties; Bricks and mortar; Timber; Bitumen. <i>Construction Management:</i> Types of construction projects; Tendering and construction contracts; Rate analysis and standard specifications; Cost estimation; Project planning and network analysis - PERT and CPM.	17	25	45 min	

**CE**

Detailed Schedule

# GATE 2022: Online Test Series

## CIVIL ENGINEERING



### Topicwise Tests

Test No.	Test Syllabus	No. of Ques.	Marks	Duration	Activation Date
25	Solid Mechanics	33	50	90 min	<b>Activated</b>
26	Concrete Structures	33	50	90 min	
27	Environmental Engineering	33	50	90 min	
28	Engineering Mathematics	33	50	90 min	
29	Fluid Mechanics and Hydraulics	33	50	90 min	
30	General Aptitude	33	50	90 min	
31	Transportation Engineering and Geomatics Engineering	33	50	90 min	<b>Activated</b>
32	Structural Analysis	33	50	90 min	
33	Geotechnical Engineering	33	50	90 min	
34	Steel Structures	33	50	90 min	
35	Hydrology and Irrigation	33	50	90 min	
36	Engineering Mechanics, Construction Materials and Management	33	50	90 min	
<b>Multiple Subject Tests</b>					
37	Solid Mechanics + Structural Analysis + Engineering Mechanics	33	50	90 min	<b>Activated</b>
38	Geotechnical Engineering + Steel Structures	33	50	90 min	
39	Fluid Mechanics and Hydraulics + Concrete Structures + Construction Materials and Management	33	50	90 min	
40	Environmental Engineering + Hydrology + Irrigation	33	50	90 min	
41	Transportation Engineering + Geomatics Engineering	33	50	90 min	
42	Engineering Mathematics + General Aptitude	33	50	90 min	
<b>Full Syllabus Tests</b>					
43	Full Syllabus Test-1 (Basic Level)	65	100	180 min	<b>Activated</b>
44	Full Syllabus Test-2 (Basic Level)	65	100	180 min	
45	Full Syllabus Test-3 (Basic Level)	65	100	180 min	
46	Full Syllabus Test-4 (Basic Level)	65	100	180 min	
47	Full Syllabus Test-5 (Advance Level)	65	100	180 min	<b>Activated</b>
48	Full Syllabus Test-6 (Advance Level)	65	100	180 min	
49	Full Syllabus Test-7 (Advance Level)	65	100	180 min	
50	Full Syllabus Test-8 (Advance Level)	65	100	180 min	
<b>Mock Tests</b>					
51	GATE Mock Test 1	65	100	180 min	<b>Activated</b>
52	GATE Mock Test 2	65	100	180 min	
53	GATE Mock Test 3	65	100	180 min	
54	GATE Mock Test 4	65	100	180 min	