

SSC JE CIVIL EXAM PATTERN

Detailed structure of the examination

Papers	Mode of Examination	Subject	Number of Questions / Maximum Marks	Duration
Paper-I	Computer- Based Examination	(i) General Intelligence and Reasoning	50/ 50	2 Hours (2 hours and 40 minutes for the candidates who are eligible for scribe)
		(ii) General Awareness	50/ 50	
		For the post of JE (Civil); Part-A General Engineering (Civil & Structural) OR For the post of JE (Electrical); Part-B General Engineering (Electrical) OR For the post of JE (Mechanical); Part-C: General Engineering (Mechanical) OR For the post of SA in IMD: Part-D General Engineering (Computer Science and Information Technology) / Part-E General Engineering (Electronics and Telecommunication Engineering)/ Part-F Physics OR For the post of JE (Telecom): Part-G: Telecommunication	100/ 100	
Paper-II	Computer- Based Examination	For the post of JE (Civil); Part-A General Engineering (Civil & Structural) OR For the post of JE (Electrical); Part-B General Engineering (Electrical) OR For the post of JE (Mechanical); Part-C: General Engineering (Mechanical) OR For the post of SA in IMD: Part-D General Engineering (Computer Science and Information Technology) / Part-E General Engineering (Electronics and Telecommunication Engineering)/ Part-F Physics OR For the post of JE (Telecom): Part-G: Telecommunication	100/ 300	2 Hours (2 hours and 40 minutes for the candidates who are eligible for scribe)



Note: The examination will be conducted in Computer- Based Examination (CBE) mode for both Paper-I and Paper-II.

SSC JE Civil Syllabus



Paper-I



General Intelligence & Reasoning

The Syllabus for General Intelligence would include questions of both verbal and non-verbal types. The test may include questions on analogies, similarities, differences, space visualization, problem solving, analysis, judgment, decision-making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series, etc. The test will also include questions designed to test the candidate's abilities to deal with abstract ideas and symbols and their relationships, arithmetical computations and other analytical functions.



General Awareness

Questions will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and such matters of everyday observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighboring countries, especially pertaining to History, Culture, Geography, Economic Scene, General Polity and Scientific Research, etc. These questions will be of such that they do not require a special study of any discipline.



Part-A (Civil Engineering)

Engineering Mechanics, Solid Mechanics, Structural Analysis, Construction Materials and Management, Estimating, Costing and Valuation, Concrete Structures, Steel Structures, Surveying, Soil Mechanics (Geotechnical Engineering), Fluid Mechanics and Hydraulics, Hydrology and Irrigation Engineering, Environmental Engineering, Transportation (Traffic) Engineering.



Part-B (Electrical Engineering)

Fundamentals of Electrical Engineering, Magnetic Circuits, A.C. Fundamentals, Measurement and Measuring Instruments, Electrical Machines, Special Electric Machines and Synchronous Generators, Generation, Transmission and Distribution, Estimation & Costing, Utilization of Electrical Energy, Basic Electronics, Power Electronics.



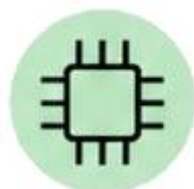
Part-C (Mechanical Engineering)

Engineering Mechanics, Strength of Materials, Theory of Machines, Machine Design, Materials Science and Engineering, Thermal Engineering, Fluid Mechanics and Hydraulic Machinery, Industrial Engineering, Manufacturing Engineering, Metrology and Measurement, Advanced Manufacturing Processes.



Part-D (Computer Science and Information Technology)

Engineering Mathematics, Digital Logic, Computer Organization and Architecture, Programming and Data Structures, Algorithms, Theory of Computation, Compiler Design, Operating System, Databases, Computer Networks.



Part-E (Electronics and Telecommunication Engineering) (A) Electronics

Electronic Materials & Components, Diodes, Transistors, Amplifiers & Oscillators, Voltage Regulation, Introduction to Network Theorems, AC Circuits, Three-Phase Circuits, Resonance, Digital Electronics, Sequential & Combinational Logic and Data Conversion & Codes.

SSC JE Civil Syllabus



Paper-II

Part-A (Civil & Structural Engineering)



Engineering Mechanics

System of forces, free-body diagrams, equilibrium equations; Internal forces in structures; Friction and its applications; Centre of mass, Moment of Inertia.



Solid Mechanics

Bending moment and shear force in statically determinate beams; Simple stress and strain relationships; Simple bending theory, flexural and shear stresses, Uniform torsion, buckling of column, combined and direct bending stresses.



Structural Analysis

Introduction to Statically determinate and indeterminate structures; Method of superposition; Analysis of trusses, arches, beams, cables and frames; Slope deflection and moment distribution method; Influence lines.



Construction Materials and Management

Construction materials: Bricks, Stones, Timber, Steel, Cement, Aggregates, Plastics, Polymers, Glass, Concrete, concrete mix design, testing of concrete. Construction Management: Types of construction projects; Project planning and network analysis - PERT and CPM.



Estimating, Costing and Valuation

Fundamentals of estimating, Cost Estimates for works, Rate Analysis, Valuation, Detailed Estimates.



Concrete Structures

Working stress and Limit State design concepts; Design of beams, slabs, columns; Foundation and Retaining Walls; Bond and development length.

SSC JE Civil Syllabus



Paper-II

Part-A (Civil & Structural Engineering)



Steel Structures

Working stress and Limit state design concepts; Bolted connections, Welds, Design of tension members, compression members and beams; Concept of plastic analysis - beams and frames.



Surveying

Principles of surveying; Errors and their adjustment; Maps - scale, coordinate system; Distance and angle measurement: Chain and Compass survey, Plane table surveying, Levelling and trigonometric levelling; Traversing and triangulation survey; Total station; Tachometric surveying, Theodolite Surveying, Advanced surveying equipment.



Soil Mechanics

Three-phase system and phase relationships, index properties; Unified and Indian standard soil classification system; Permeability - one dimensional flow, Seepage through soils - two - dimensional flow, flow nets, uplift pressure, piping, capillarity, seepage force; Principle of effective stress and quicksand condition; Compaction of soils; One-dimensional consolidation, time rate of consolidation; Shear Strength, Mohr's circle, effective and total shear strength parameters, Stress-Strain characteristics of clays and sand.



Fluid Mechanics

Properties of fluids, fluid statics; Continuity, momentum and energy equations and their applications; Laminar and turbulent flow; Flow in pipes, pipe networks; Concept of lift and drag.



Hydraulics

Forces on immersed bodies; Flow measurement in channels and pipes; Channel Hydraulics - Energy-depth relationships, specific energy, critical flow, hydraulic jump, uniform flow.



Hydrology

Hydrologic cycle, precipitation, evaporation, evapo-transpiration, watershed, infiltration, unit hydrographs, hydrograph analysis, reservoir capacity, flood estimation and routing, groundwater hydrology - steady-state well hydraulics and aquifers; Application of Darcy's Law.



Irrigation

Types of irrigation systems and methods; Crop water requirements - Duty, delta, evapo-transpiration; Gravity Dams and Spillways; Lined and unlined canals, cross drainage structures.

SSC JE Civil Syllabus



Paper-II

Part-A (Civil & Structural Engineering)



Water and Wastewater Quality and Treatment

Basics of water quality standards – Physical, chemical and biological parameters; Water quality index; Unit processes and operations; Water requirement; Water distribution system; Drinking water treatment. Sewerage system design, quantity of domestic wastewater, primary and secondary treatment. Effluent discharge standards; Sludge disposal; Reuse of treated sewage for different applications.



Air Pollution

Types of Pollutants, their sources and impacts, Air Pollution control, Air Quality Standards, Air Quality Index 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).



Transportation Infrastructure

Geometric design of highways - cross-sectional elements, sight distances, horizontal and vertical alignments. Geometric design of railway Track – Speed and Cant.



Highway Pavements

Highway materials - desirable properties and tests; Desirable properties of bituminous paving mixes; Design