

**Scheme of Examination for Recruitment to the Post of
Assistant Engineer (Civil) (Direct Recruitment)**

The following shall be the Scheme of Examination, components of written test and its syllabus for recruitment to the post of **Assistant Engineer (Civil)** by **Direct Recruitment**.

A. Scheme of the Examination:

Type	Written Test	Time Duration	Maximum Marks
Paper-1	Objective Type (80 questions)	1.30 hours	80
Paper-2	Descriptive Type	2.30 hours	120
Total Marks: (80 + 120)			200 Marks

B. Components of Written Test:

Paper-1 (Objective Type) – Number of Questions 80, Maximum Marks 80, Time allowed: 1:30 hours)

Note: There shall be no negative marking for wrong answers.

C. Syllabus

Paper -1:

Questions will be designed to test the ability of the candidate's General Studies as under:

Sl. No.	Subject	Syllabus	No. of Questions
	General English	Comprehension, Grammar, Synonyms and Antonyms, Sentence Correction etc.	80
	General Science	General application and understanding of science including matters of everyday observation and experience	
	Current Affairs	Knowledge of significant national and international events	
	History	General understanding of the subject in its social, economic and political aspects	
	Geography	Physical, Social and Economic Geography of the country, including the main features of Indian agricultural and natural resources, etc.	
	Computer Knowledge	MS-Word, Excel, PPT, Tally, Email etc	
	Indian Polity & Economy	Country's political system and Constitution of India, Panchayati Raj, Social systems and economic developments in India, etc.	
	General Mental Ability & Empathy	Reasoning and analytical abilities, Situational analysis, empathy etc.	

Paper-2: (Descriptive Type) – Domain Knowledge: General Engineering (Civil & Structural) Maximum Marks: 120, Time allowed: 2:30 hours

The questions will be designed to test the domain knowledge of the candidate in the following areas:

- **Building Materials:** Physical and Chemical properties, classification, standard tests, uses and manufacture/quarrying of materials e.g. building stones, silicate based materials, cement (Portland), Asbestos products, Timber and Wood based Products, laminates, bituminous materials, paints, varnishes.
- **Surveying:** Principles of surveying, working of properties, compass and bearing, plane table surveying, theodolite traverse, adjustment of theodolite, levelling and contouring, curvature, refraction, permanent adjustment of dumpy level, methods of contouring and uses of a control map, tachometric survey.
- **Soil Mechanics:** Origin of soil phase diagram, definitions of void ratio, porosity, degree of saturation, water content, specific gravity of soil grains and unit weights, grain size distribution curves for different soil and their uses. Atterberg's limits, IS soil classification, plasticity chart, coefficient of permeability, effective stress, consolidation of soils. Calculation of shear strength of soils, direct shear test, vane shear test, triaxial test, soil compaction, Lab compaction, Lab compaction test, moisture content and bearing capacity of soils, plate load test, standard penetration test.
- **Hydraulics:** Fluid properties, hydrostatics, measurements of flow, Bernoulli's theorem and its application, flow through pipes, flow in open channels, weirs, flumes, spillways, pumps and turbines.
- **Environmental Engineering:** Quality of water, source of water supply, purification of water, distribution of water, need of sanitation, sewerage system, circular sewers, oval sewer, sewer appurtenances, surface water drainage, sewage treatments.
- **Structural Engineering :** Theory of structures: Elasticity constants, type of beams, determinate and indeterminate, bending moment and shear force diagrams of simply supported, cantilever and over hanging beams. Moment of area and moment of inertia for rect. & circular section, bending moment and shear stress for tee, channel and compound sections, chimneys, dams and retaining walls, eccentric loads, slope deflection of simply supported and cantilever beams, critical load and columns, torsion of circular section.
- **Concrete Technology :** Properties, Advantages and uses of concrete, cement aggregates quality, water cement ratio, workability, mix design, storage, batching, mixing, placement, compaction, finishing and curing of concrete, quality control of concrete, hot weather and cold weather concreting, repair and maintenance of concrete structure.
- **RCC Design:**
RCC beams: flexural strength, shear strength, bond strength, design of single reinforced beams, lintels, cantilever beams, double reinforced beams, one way slabs, two way slabs, isolated footings, reinforced brick work. T-beams, columns, staircases, retaining walls, water tanks (RCC design questions may be based on both Limit State method and Working Stress method).
Steel Design: Steel design and construction of steel columns, beams, roof trusses, plate girders
- Noting & Drafting , E-tender, Procurement of Goods, Works etc.

D. Interview:

The interview/personality test shall be conducted in such a manner that the candidates' suitability for the post is probed among other things, through academic qualifications, relevant experience, extra-curricular activities, general awareness/knowledge, communication and problem solving skills and overall personality etc.