

Non-Teaching Staff Recruitment
(Advertisement No. IITT/STAFFREC/01/2025 dated 14-07-2025)

Junior Technician (Civil)

I. Level - I (Objective Test)

Level - I is a screening test conducted to shortlist a reasonable number of candidates for the Level II and Level- III tests.

II. Level - II (Descriptive Test)

III. Level - III (Skill/Trade Test)

The test is intended to assess candidates' hands-on skills in Civil Engineering practices and basic office operations, including MS Office (Word, Excel, PowerPoint), Scheduling, and related tasks.

Syllabus for Level I and II

1. Quantitative Aptitude: Number systems, simplification, decimals, fractions, LCM, HCF, ratio & proportion, percentage, log and trigonometric functions, solutions of simple equations (linear and quadratic), basic statistics – mean and standard deviation, profit & loss, discount, simple & compound interest, mensuration, time & work, time & distance, tables & graphs.

2. Logical reasoning Aptitude: Analogies, similarities, differences, space visualization, analysis, judgment, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning, verbal and figure classification

3. Computer-related Aptitude: Hardware, software, operating systems, basic operations in MS Office® - Word, Excel, PowerPoint

4. Language Aptitude: Comprehension, vocabulary, basic grammar in English

5. Technical Subjects (Civil Engineering)

- a. **Building Materials:** Properties, types, and uses of materials such as cement, aggregates, bricks, steel, and timber.
- b. **Construction Technology:** Foundations, walls, roofs, masonry, and various types of floors and finishes.

- c. **Surveying:** Principles, instruments, and techniques for measuring distances, angles, and elevations, including leveling and contouring. Overview of surveying techniques and classifications, Importance of surveying in civil engineering, Introduction to surveying instruments and tools. Techniques for accurate levelling and measurement. Introduction to Total Station and its components, Techniques for using Total Station in surveying, Importance of accurate data reading and recording
- d. **Estimating & Costing:** Methods for calculating the cost of construction projects, analyzing rates, and preparing bills of quantities. Overview of estimation techniques in civil engineering, Importance of accurate estimation for project planning and budgeting, Types of estimates (preliminary, detailed, etc.), Practical exercises in preparing estimates using software, Emphasis on accuracy and detail in estimation.
- e. **Soil Mechanics:** Basic principles of soil behaviour, including tests for particle size, water content, and density. Types of soil and their properties. Foundation types (shallow, deep), Factors affecting foundation selection and design
- f. **Fluid Mechanics:** Basic concepts of fluid properties, pressure, buoyancy, and types of flows.
- g. **Concrete Technology:** Properties of concrete, admixtures, mix proportioning, and the casting of various RCC members. Basics of RCC, Uses and advantages of RCC in construction, Techniques of RCC construction.
- h. **Prefabricated Structures:** Introduction to prefabricated building techniques, Advantages and disadvantages of prefabrication, Examples of prefabricated structures
- i. **Steel Structures:** Basics of steel construction, Types of steel structures (beams, columns, trusses), Techniques for assembling and welding steel components.
- j. **Floors & Floorings:** Types of flooring materials, Techniques of floor construction, Maintenance and durability of different types of flooring.
- k. **Arches & Lintels:** Types of arches and lintels, Construction techniques for arches and lintels, Structural significance of arches and lintels.
- l. **Roofs:** Types of roofs (flat, pitched, curved), Materials and construction techniques for roofs, Importance of roof design in building aesthetics and functionality.
- m. **Engineering Drawing:** Basic drawing techniques, projections (orthographic, isometric), scales, and the importance of symbols and lettering in civil drawings.
- n. **Doors, Windows, & Ventilators:** Types of doors, windows, and ventilators, Materials used for doors and windows, Construction and installation techniques.
- o. **Computer-Aided Design (CAD):** Introduction to CAD software (e.g., AutoCAD), basic commands, and drafting of building layouts in 2D and 3D.

- p. **Workshop Practice:** Drawing instruments and techniques for model-making.
- q. **Site Work:** Operating tools, setting out trenches, brick masonry, bar bending, and forming work.
- r. **Water Resources:** Overview of water resource management, Techniques for designing irrigation systems and water supply networks.
- s. **Public Health Engineering (PHE):** Overview of public health engineering systems, Techniques for designing water supply and drainage systems, Importance of hygiene and sanitation in public health engineering.
- t. **Plumbing:** Water supply and soil pipes using different fittings and appliances, Basics of plumbing systems in buildings, Types of pipes and fittings, Techniques for installing and maintaining plumbing systems.

IV. Weightage for Selection

Equal weightage will be given to Level-I and Level-II tests for the purpose of preparing the merit list.

The Level- III test is Qualifying in Nature (Pass/Fail); however, a minimum Score of 50% is required to Qualify in Level III.