

**INDIAN INSTITUTE OF TECHNOLOGY MADRAS, CHENNAI-600036.**

Advertisement No. IITM/R/2/2024 dated 02.03.2024

**Syllabus & Scheme of Examination**

**Post: Junior Technician**

**Stream: Civil Engineering**

**LEVEL-1 Multiple Choice Question Test**

**(100 Marks)**

**PART – A**

**(30 Marks)**

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. **General awareness aptitude:** Current events, general knowledge, Indian history, Indian constitution, basic geography.

**PART – B**

**(70 Marks)**

1. **Construction Materials and Construction Practice:** Soil, Bricks, Timber, Stone, Lime, Cement and Concrete, Steel, Glass – Materials properties and laboratory experiments; Foundations; Masonry; Flooring; Plastering and Painting; Formwork and scaffolding; testing of materials for properties.
2. **Soil Mechanics and Foundation Engineering:** Index properties of soil; hydraulic properties of soil; classification and strength of soil; sampling; soil stabilization; seepage analysis; bearing capacity and foundation settlement; basics of foundation engineering; Basic tests on soil.
3. **Basic Structural Engineering:** Simple stresses and strains; shear force and bending moment; geometrical properties of sections; stresses in beams and shafts. Slope and deflection of beams, propped cantilevers; Fixed beams and continuous beams, portal frames (including moment distribution method); Columns and struts; Masonry dams; Earth pressure and retaining walls; design of reinforced concrete structures – beams, one way slabs and columns; fundamentals of limit state design; design of simple steel members.
4. **Basic Transportation Engineering:** Classification of roads; Geometric design of highway; Rigid and flexible pavements.
5. **Estimating, Costing and Basics of Construction Management:** Areas and volumes; Embankments and Cuttings; Analysis of rates; Taking off quantities. Planning of civil

engineering projects; contracts management; scheduling and time management; resource management; quality management and safety

6. **Surveying theory and practice:** Chain survey; compass survey; levelling; contour surveying; GPS; Theodolite survey; Tacheometric survey.
7. **Hydraulics and Water Resources Management:** Measurement of pressure; hydrostatic pressure on surfaces; flow of fluids; flow through orifices, mouthpieces, and pipes; flow through notches and weirs; flow through open channels; Basics of hydrology and ground water; management of ground water; storage and distribution works; canal irrigation; water harvesting and recycling.
8. **Environmental Engineering:** Water supply engineering – estimation of water requirements, selection of sources and pipe materials, methods of water purification, water supply and distribution; Sanitation engineering – methods of collection and conveyance of sewage, primary and secondary treatments, methods of disposal; Pollution control – identification of various pollution and their prevention, environmental impact assessment.

## LEVEL – 2 Trade Test

- **Trade Test** - Syllabus as above under Part-B for Level-1 Multiple Choice Question Test

### Scheme of Examination:

Level	Type of Test	Time	No. of Questions – Max. Marks	Weightage for the final result
Level -1	Multiple Choice Question Test	Time: 120 Minutes	100 Objective Questions – 100 Marks	70 %
Level-2	Trade Test	Time: 90 minutes approximately	Practical Trade Test	30 %

- A minimum of 5X candidates shall be shortlisted (for X number of posts advertised) for the Level-2 Trade Test, based on their performance in the Level-1 Multiple Choice Question Test.

### NOTE:

- a) The medium of examination will be ENGLISH
- b) The questions will generally be on the minimum qualification level i.e., Diploma Level.
- c) There shall be no negative marking for wrong answers.
- d) **The Level-1 Multiple Choice Question Test is tentatively scheduled to be held on 06<sup>th</sup> February 2025 at TCS iON Centres in Chennai.**