भारतीय प्रौद्योगिकी संस्थान तिरुपती
INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
भारतीय प्रौद्योगिकी संस्थान तिरुपति
Renigunta Road, Settipalli Post, Chittoor District, Tirupati – 517506

Non-Teaching Staff Recruitment

(Advertisement No. IITT/STAFFREC/02/2023 dated 23-08-2023)

JUNIOR TECHNICIAN: Civil & Environmental Engineering

Strength of materials:

Stresses, strains, Hooke's law & elastic constants, stress-strain relationship; Types of loads and different support conditions, determination of SF and BM in simple beams under different loading systems; Calculating geometrical properties - centroid, moment of inertia for sections of different shapes; Simple beam bending theory, bending stress distribution in beams, columns-crippling load, combined stresses

Building materials and construction:

Different construction materials (stone, brick, cement, steel rebar) and their physical properties; preparation of mortar and cement concrete. Laboratory test setup and procedure for evaluating the physical properties: tensile strength on mild steel bars, bending test on simply supported beams, initial and final setting time of cement, fineness, normal consistency, soundness of cement, workability of concrete, compression tests on bricks and cubes, determination of flakiness index, fineness modulus of fine and coarse aggregate and water absorption in bricks & pressed tiles.

Buildings - stone masonry & brick masonry, different types of foundations, floors and roofs

Surveying:

Plane surveying, Chain, compass, levelling, theodolite surveying, GPS and Total station

Hydraulics and hydraulic machines:

Fluid statics – measurement of pressure using manometers; Determination of friction losses in pipes; Flow measurement in pipes using venturimeter and orificemeter; Flow measurement in channels – using rectangular and V-notches. Basics of centrifugal pumps;

Soil mechanics and foundation:

Classification of soils, index properties, permeability, types of footings, laboratory & field tests - voids ratio, porosity of sand, determination of liquid limit, plastic limit, bulk density and specific gravity of fine and coarse aggregates, proctor's compaction test on clay, Direct shear test on sand and field density of soil

Highway Engineering:

Construction of road/highway and railways, Laboratory test on bitumen, abrasion test on aggregate, evaluation of aggregate crushing & impact value, Mix design, Basic performance tests.

Structural Design:

Analysis and design simple RCC elements like singly / doubly reinforced rectangular beams for shear and flexure by limit state method; Design One way/ Two way slabs and Staircases by limit state method; Design Axially loaded Columns and Footings by limit state method; Design simple Steel members like Laterally supported Beams, Tension members, Compression members and Welded connections by working stress/ limit state method.

Environmental Engineering:

Water supply-demand requirements; quality of water, testing of water - collection of water sample - physical, chemical, bacteriological tests. Determination of total & settleable solids present, turbidity, pH value in the given sample of water. Standards of drinking water. Water treatment – primary and secondary treatment, Sewage treatment –primary, secondary and tertiary treatment

Selection Criteria:

1) Level-I : Objective Based Test
2) Level-II : Descriptive Test
3) Level-III : Skill/Trade Test (Qualifying Nature: minimum 50% Score is required to qualify)

Note: All the above tests will be based on the above-mentioned syllabus. Equal weightage will be given to Level-I and Level-II tests to prepare a merit list.