

# SYLLABUS FOR THE POST OF TECHNICIAN : CIVIL ENGINEERING

## Mental Ability, Reasoning and Mathematical Skills:

Analogy, series completion, coding-decoding, blood relations, logical venn diagrams, alphabetical test, number ranking and time sequence test, *mathematical* operations, arithmetical *reasoning*, data interpretation, data sufficiency, cubes and dice, construction of sequences and triangles.

Mathematics based on tenth standard of CBSE

## Computer awareness

Components of a computer system, specifications of a computer system, Input and output devices and installation of printers and other input output devices., Introduction to Internet and Internet Applications, MS windows, MS-Word, MS-Excel, MS Power Point, MS Access, Computer Networking, Computer shortcut keys, Virus and virus protection, Operating System types.

## English Language Proficiency

English language based on tenth standard of CBSE

## Post Specific

TOPIC	DETAILS
Basic Fundamentals of Fluid Mechanics	Properties of Fluids, Hydrostatic Pressure, Measurement of Pressure, Fundamentals of Fluid Flow, Flow Measurement, Flow through Pipes, Flow Through Open Channels, Hydraulic Pumps
Building Materials	Laboratory based characterization of stones, bricks, tiles, cement, concrete, timber, steel, Block Board, Commercial Board, Flush Door, Shutter, Chequered Tiles, Kerb Stone, Paver Blocks, Sound and Thermal Insulation materials and fly ash. Awareness of relevant codes.
Building Construction	Basic construction technology and requirements for brick masonry, stone masonry, arches, trusses, Concrete structures, scaffolding, foundation construction. Different surface finishing processes such as Plastering, Pointing, Painting, White-Washing and distempering. Anti-termite treatments in building
Surveying	Principles of surveying, survey instruments, chain surveying, working of prismatic compass, compass traversing, bearings, local attraction, plane table surveying, theodolite traversing, adjustment of theodolite, Leveling, temporary and permanent adjustments, tachometer, GPS, Introduction to remote sensing and GIS
Soil Mechanics	Classification of various types of soils, type of foundation structure, computation of shear strength parameters of soil, compaction and consolidation of soils, bearing capacity of soil
Quantity Surveying and Evaluation	Units of measurement, Calculating quantities of materials and prepare the material chart, rate analysis, tender document of different civil engineering items by using C.S.R. rates with premium, Valuation of

	Billing
Structural Mechanics	Physical properties of steel, Computation of direct and bending stresses for beams and columns, M.O.I, Second Moment of Inertia, Radius of Gyration, Section Modulus of Resistance for steel sections, Calculation of Bending Stresses, Moment of Resistance of simply supported beams, Stress Distribution Diagram for rectangular section.
Irrigation Engg	Different crops and their water requirements, Concept of Design rainfall and runoff, Hydrographs, Installation of tube wells and water harvesting techniques, Supervise maintenance and construction work of canal head works and cross regulators, Supervise construction of various river training works, desilting operations.
Concrete Technology	Physical properties of cement as per IS Codes, Various tests on aggregates in laboratory, grading charts for different aggregates, Properties, Advantages and uses of concrete, water cement ratio, workability, bleeding, segregation, harshness defects, mix design, storage, batching, mixing, placement, compaction, finishing and curing of concrete, quality control of concrete, hot and cold weather concreting, NDT of Concrete.
Water Supply and Waste Water Engineering	Physical and chemical tests of water, Calculation of size of different pipes to carry water, network of pipes for water supply as well as sewerage. Necessity of systematic collection and disposal of waste, Collection and conveyance of sewage, Estimation of waste quantities, treatment methods, waste characterization, Waste water Conservancy and water carriage systems, their advantages and Disadvantages (a) Surface drains: various types, Types of sewage: Domestic, industrial, storm water and its seasonal variation.
Highway Engg.	Cross sectional elements, types of pavements, characterization of pavement materials – aggregates and bitumen, Introduction to flexible and rigid pavements – Water Bound Macadam (WBM) and Wet Mix Macadam (WMM), Gravel Road, Bituminous construction, Rigid pavement, Determination of the California bearing ratio (CBR) for the sub-grade soil.
Railways Bridges & Tunnels	Railway Engineering Components of permanent way – sleepers, ballast, fixtures and fastening, track geometry, points and crossings, track junction, stations and yards. Different types of rail gauges used in India, Use of different types of rail fastenings and fixtures, Classification of bridges Essential components of a ROB and RUB
RCC Design	Design concept of structural components as per relevant codes, Design of axially loaded column and footing. Limit State and Working Stress methods, Introduction to Pre-Stressed Concrete
Steel Structure Design	Structural properties of steel and its designation as per Indian Standards, types of joints, different types of trusses, their components and usability, simply supported steel beams, types of plate girders.