Syllabus of Technical supervisor

1.Construction Materials & Concrete Technology : 10 MARKS

Construction Materials: Overview of Construction Materials, Natural Construction Materials, Artificial Construction Materials, Special Construction Materials, Processed Construction Materials.

Concrete Technology: Cement, Aggregates and Water; Concrete, Concrete Mix Design and Testing of Concrete, Quality Control of Concrete; Chemical Admixture, Special Concrete and Extreme Weather concreting.

2.Building Construction & Building Planning and Drawing & Urban Construction Technology &Building Services and Maintenance : 15Marks

Building Construction: Overview of Building Components, Construction of Substructure, Construction of Superstructure, Building Communication and Ventilation, Building Finishes & Building Planning and Drawing **:**Conventions and Symbols, Planning of Building with reference to CGDCR.

Urban Development and Planning, Urban Housing, Urban Construction Technology: Water Supply and Sanitation for Urban Areas, Low Cost Urban Roads, Liquid & Solid sanitation, Advanced Construction Materials, Advanced Concreting Methods and Equipments, Advanced Technology in Constructions, Hoisting and Conveying Equipments, Miscellaneous Machineries and Equipments.

Building Services and Maintenance:Overview of Building Services, Modes of vertical communication, Fire Safety, Plumbing Services; Lighting, Ventilation and Acoustics

3. Basic Surveying & Advanced Surveying:10 MARKS

Overview and Classification of Survey, Chain Surveying, Compass Traverse Survey, Levelling and Contouring, Measurement of Area and Volume, Total Station , Theodolite Survey Drone Survey, level survey & DGPS survey, Plane Table Surveying, Theodolite Surveying, Tacheometric surveying and Curve setting

3. Mechanics of Material & Theory of structures & Design of Steel and RCC Structures & Advanced Design of structures: 10 MARKS

Moment of Inertia, Simple Stresses and Strains, Shear Force and Bending Moment, Bending and Shear Stresses in beams, Columns, Direct and Bending Stresses in vertical members, Slope and Deflection, Fixed and Continuous Beam, Moment distribution method, Simple trusses.

Design of Steel and RCC Structures :Design of Steel Tension and Compression Members (Limit State Method),

Design of Steel beams (Limit State Method), Design of Reinforced Concrete Beams by Limit State Method; Shear, Bond and Development length in Design of RCC member; Design of axially loaded RCC Column.
Advanced Design of structures: Design of connections in Steel structures, Steel Beams, Design of RC flanged Beam, Design of slab, and Design at RCC column and Footing Design: Uni-axial Bending

4. Geotechnical Engineering:10 Marks

Overview of Geology and Geotechnical Engineering, Physical and Index Properties of Soil, Permeability and Shear Strength of Soil, Bearing Capacity of Soil, Compaction and stabilization of soil.

5. Water supply Engineering &Environment Engineering & Waste Water technology &Solid Waste Management :10 Marks

Water supply Engineering: Raw water Sources, Raw water Treatment process in water treatment plant, Types of chemical used in water treatment, Types of Electrical / Mechanical Equipment, water treatment plant to Water distribution station trunk main line design period.
Environment Engineering :Air pollution & ambient air quality standards. Waste Water technology :Waste water characteristics, pollution of natural water, waste water treatment fundamentals and reuse of waste water.
Solid Waste Management :Introduction; Storage, Collection and Transportation of Municipal Solid Waste; Composting of Solid Waste, Techniques for Disposal of Solid Waste, Biomedical and E-waste management, types and source of solid waste, characteristics (Physical & chemical), Reuse and recycling of solid waste (Heat recovery and composting).

6. Transportation Engineering & Traffic Engineering & Design, Construction and Maintenance of Roads, Use of Plastic Waste in Road Construction & Bridge Engineering: 15 Marks

Overview of Highway Engineering, Geometric Design of Highway, Construction of Road Pavements, Construction and Maintenance, ATVU, junction traffic volume. Fundamentals of Traffic Engineering, Traffic Studies, Road Signs and Traffic Markings, Traffic Signals and Traffic Islands, Road Accident Studies and Arboriculture, White topping road, PQC and RCC road, mastic asphalt technology and Micro surface road .
Bridge Engineering:Planning, Construction, maintenance, Cost, Analysis, Strengthening, rehabilitation

7. Estimating and Costing & Tendering and Accounts & Construction Management: 10Marks

Fundamentals of Estimating and Costing, Approximate Estimates, Detailed Estimate, Estimate for Civil Engineering Works, Rate Analysis &

Tendering and Accounts :Procedure to execute the work, Contracts, Tender and Tender Documents, Accounts, Introduction to Valuation, Gov B1/B2 form, R&B & GWSSB technical and general specifications .

Construction Management :Construction Industry and management, site Layout, Planning and Scheduling, Construction Contracts and Specification, Safety in Construction

8. Repairs and Maintenance of Structures (Water, Drainage, Road, Foot path, Building, bridge) :5 Marks

Basics of maintenance, Causes and detection of damages, Materials for maintenance and repairs, Maintenance and repair methods for masonry Construction, Maintenance and repair methods for RCC Construction

9. Civil Engineering in Gujarat: Important Buildings, Monuments and Construction-Historical as well as Modern & Current Trends and Recent Advancements in the field of Civil Engineering (5Marks)