

DRAFTSMAN CIVIL

SYLLABUS FOR WRITTEN TEST

MAX. MARKS: 120

TIME DURATION: 02:00 Hrs

1. **Surveying:-** **10 Marks**
Importance of surveying, principles and classifications, measurements of distance and directions, chain surveying, compass surveying, leveling, tachometry, theodolite, traversing, contouring, plane table surveying, curves.
2. **Mechanics and Structural Analysis:-** **15 Marks**
Introduction, concept of rigid body scalar and vector quantities, Laws of forces, moment, friction, centre of gravity, simple machines, torsion, Properties of material, Bending moment and shear force in statically determinate beams, Simple stress and strain relationship. Stress and Strain in two dimensions, principal stresses, stress transformation, Simple Bending Theory, flexural and shear stresses, Unsymmetrical bending, Shear Centre. Thin walled pressure vessels, Uniform Torsion, Buckling of column, Combined and direct bending stresses, slope and deflection, Analysis of trusses.
3. **RCC Structures:-** **15 Marks**
Concrete Technology, Ingredients of Concrete, Water Cement Ratio, Workability properties of concrete, admixtures, special concretes, Non destructive tests, basics of mix design. Concrete design- basic working stress and limit state design of members subjected to flexure, shear compression and torsion by limit state methods. Basic elements prestressed concrete, analysis of beam sections at transfer and service loads. One way slab, two way slab.
4. **Soil Mechanics:-** **10 Marks**
Origin of Soils, Properties, soil classification, three phase system, fundamental definitions, relationship and interrelationship, flow of water through soils, permeability & seepage, effective/stress principle, deformation of soils, consolidation, compaction, shear strength characteristics, plate load test, SPT, Density control, Measurement of field density by core cutter and sand replacement method, soil exploration, bearing capacity and its methods.
5. **Fluid Mechanics & Hydraulics:-** **10 Marks**
Properties of fluids, Hydrostatic pressure, measurement of pressure, flow measurements, flow through pipes, flow through open channels, hydraulic pumps, principle of conservation of mass, momentum, energy and corresponding equations, potential flow, applications of momentum and Bernoulli's Equation, Laminar and Turbulent Flow, Flow in pipes, pipe networks, Concept of Boundary layer and its growth. Uniform flow, critical flow and gradually varied flow in channels, specific energy concept, hydraulic jump. Forces on immersed bodies, flow measurements in channels, tanks and pipes. Dimensional analysis and hydraulic modeling. Kinematics of flow.
6. **Irrigation Engineering:-** **10 Marks**
Introduction, Water Requirement of crops, hydrological cycle, Dams, Canals, Canal head works and regulatory works, cross drainage works, hydraulic structures, river training works, water logging, drainage, ground water recharge, well hydraulics.



