DETAILED SYLLABUS FOR THE POST OF OVERSEER GR.II (CIVIL)-UNIVERSITIES IN KERALA/THIRD GRADE DRAFTSMAN/THIRD GRADE OVERSEER -LSGD/ THIRD GRADE OVERSEER(CIVIL) - SR FOR SC/ST - PWD

(CATEGORY NOS.882/2025,567/2025,222/2025)

TOTAL MARKS : 100

1.BUILDING MATERIALS. (15 MARKS)

Rock, Stones, Brick, lime, cement, pozzolanic materials- classification, types, uses
Clay Products – earthenware,stoneware, porcelain, terracotta, glazing, types,.
Mortar –. Preparation Classification, types, uses
Concrete –. Preparation Classification, types, uses.
Timber. Structure, defect classification, seasoning, uses
admixtures - for cement mortar & cement concrete, classification, types, uses
Paints, varnishes, metals, plastics- classification, types, uses

2. CONSTRUCTION TECHNOLOGY (15 MARKS)

Components of a building,Stone masonry-, Brick Masonry, Hollow blocks and Composite masonry - Elements, Classification, types of bonds.
Arches - Technical terms-types, centering, Lintel- types-wooden, brick, Stone, steel & RCC.
Foundation:-Construction details of Shallow & Deep Foundation. Types of foundations-Well foundation, Special foundations,Pile foundations, foundation on black cotton soils.
Permanent & temporary structures:- life of structures, sub structure, super structure,load bearing structure, cavity wall, framed structure. Form work, Scaffolding, shoring,underpinning- purpose, parts, Partition –requirements, types.
Treatments for building structure:- Damp proofing courses, Anti-termite treatment,Weathering course - materials, properties, functions, types, objectives, uses and method. Fire-proofing. Effect, rules.
Carpentry joints terms, classification of joints, Uses & types of fixtures & fastenings.
Doors, Windows, and ventilators –Parts, Location, Standard sizes, types
Floors – Ground floor & upper floor-Types. Flooring- materials used, types
Roofs & Covering of Roofs Purposes- Elements, Types-Flat, Pitched, Truss- King Post, queen post, Mansard, Bel-fast, steel, composite. Shell Types-North-light & double curved. Dome- Component parts. Roofs & Coverings- Objectives, Types & uses.

3.BUILDING DRAWING AND PLANNING (10 MARKS)

Layout of drawing. Lines, Lettering, Dimensioning, Scales and Projection. Importance of B.I.S. Introduction of Code of Practice for Architectural and Building Drawings (IS: 962- 1989). Principle of Planning, Objectives and importance, Functions and Responsibility, Orientation. Local Building Bye-Laws

as per ISI Code.
Layout Plan & Key Plan. Submission Drawing. Provision for safety. Requirement of green belt and land.
Computer-aided drafting. -Operating system ,Hardware & software -Introduction of CAD -Its Graphical User Interface. -Method of Installation -Basic commands of CAD.

4. R C C AND STEEL STRUCTURES (10 MARKS)

R C C - Materials -proportions-Characteristics. Method of mixing concrete, Slump test. Formwork, steel behavior and test. Bar bending details as per I. S. Code.
RCC Structure- columns, beams, slabs- one-way and two-way slab, Innovative construction, Retaining wall, R C C framed structure- Safety against earthquake.
Steel structures:- Common forms of steel sections. Structural fasteners, joints. Tension and compression member. Classification fabrication. Construction details.

5. PUBLIC HEALTH AND SANITARY ENGINEERING (5 MARKS)

Terms used in PHE. Systems of sanitation. System of house drainage. System of house Plumbing, sanitary fittings etc. Purification of water. Types of sewer appurtenance. Manholes & septic tank. New technology of plumbing System.

6. ROADS, RAILWAYS, BRIDGES AND TUNNELS (10 MARKS)

General principles of alignment. Classification and construction of different types of roads. Components parts. Road curves and gradient. Road drainage system.
Bridges & Tunnels:- Components parts of a bridge. Types of superstructure and Substructure- Classification of bridges, IRC loading. Selection of type and location, Alignment of bridge- Caissons, Cofferdam. Classification of culverts. Tunnels- rules used for the sizes of different members.
Railways:- Permanent way. Rail gauges, functions, requirements of component parts, types, sections, length of rail. Welding of rail, wear of rail. Coning of wheels,hogged rail, bending of rail, creep of rail. Causes and prevention of creep. Fixtures,fastenings, Joints-types, Construction of permanent way. Railway station and yard.

7.IRRIGATION ENGINEERING (10 MARKS)

Hydrology- duty, delta, base period, intensity of irrigation. Hydrograph- peak flow, run off, catchment area, CCA. Rabi crop, Kharif crop,
Storage/Diversion head work characteristics, Types. Dams, Barrages & weir-types,classifications and purposes. Hydro-electric project -component parts and functions Canals:-classification and distribution system, canal structures. Types of cross drainage works like Aqua duct, Super passage, Siphon, Level crossing, inlet and outlet, etc.

8. ESTIMATING AND COSTING (5 MARKS)

Common techniques, units of Measurement, necessity, importance, approximate and detailed estimate types- taking off quantities-method. Rate analysis of typical items and their specifications. Labour and materials. Schedule of rates. Estimating of irregular boundaries by trapezoidal and Simpson's formulae.

9. SURVEYING AND LEVELLING:- (10 MARKS)

SURVEYING:-Instrument employed. and common terms. Classification-plain and geodetic. Chaining, Plane table survey, Compass survey:- Instrument and its setting up. Bearing and included angle, Local attraction. Magnetic and true bearing, declination.
LEVELING:- Principle of levelling, Dumpy level, auto level-. Levelling staffs- Types, component parts, and function. Temporary and permanent adjustment. Technical terms- Level and horizontal surface, Datum, benchmark, focusing, and parallax. Deduction of reduced levels. Types of levelling. Contouring.

10. ENGINEERING MECHANICS (10 MARKS)

Definition of stress, strain, elasticity, Hook's law, Elastic limit, Modulus of elasticity.
Type of Stresses. Standard stress-strain curve for mild steel bar under tension, Yieldstress, Proof stress, Ultimate stress, Strain at various critical points, Percentage elongation. Mechanical properties of materials.
Identify the centroid of geometrical plane figures.
Moment of inertia (M.I.): M.I. of plane lamina and solid bodies. Radius of gyration,Parallel and Perpendicular axes theorems. Polar Moment of Inertia of solid circular sections
Friction:-Types and laws of friction, limiting equilibrium, limiting friction, coefficient of friction, angle of friction, angle of repose, relation between coefficient of friction and angle of friction.
Resolution of a force - Orthogonal components of a force, principle of transmissibility.
Composition of forces – Resultant, analytical method for determination of resultant for concurrent, Non-concurrent and parallel co-planar force systems. Moment of a force, Varignon's Theorem, torque. Equilibrium and Equilibrant, Lami's Theorem – statement and explanation.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.