

SYLLABUS for MPPEB (Vyapam Sub Engineers) CIVIL ENGINEERING

Surveying:

Importance, types, objects, principles and classification of surveying; chain & cross staff survey, compass survey, levelling, contouring, plane table survey, theodolite survey, curves, errors and adjustments, remote sensing.

Material Technology:

Masonry materials, binding materials, aggregates, mortars, concrete, timber, artificial timber, paints, varnishes & colours.

Building Construction:

Building components, construction of sub structure and super structure, building finishes safety and environmental aspects.

Hydraulics:

Properties of fluid, hydrostatic pressure, measurement of liquid pressure in pipes, fundamentals of fluid flow, flow of liquid through pipes, flow through open channel, flow measuring devices, hydraulic machines

Building Drawing:

Conventions as per IS: 962*1967 practices, planning of building. . .

Soil Mechanics:

Physical properties and classification of soil, permeability and seepage analysis, shear strength and bearing capacity of soils, earth pressure, compaction of soil & stabilization, site investigation and sub soil exploration.

Applied Mechanics:

Composition and resolution of forces, parallel forces and couples, moments and their applications, equilibrium of forces, centre of gravity, friction, simple lifting machines, motion of a particle, laws of motion, work, power and energy.

Mechanics of Structures:

Stress & strain, elastic constants & principal stresses, shear force and bending moment, moment of inertia, stresses in beams, analysis of trusses, columns.

Transportation Engineering:

Road engineering, classification of roads, traffic and tonnage, investigation for road project, geometric design of highways, construction of roads pavements and materials, traffic engineering, drainage of roads, maintenance and repairs of roads, arboriculture.

Irrigation Engineering:

Advantages of irrigation, ill effects of over irrigation, types of irrigation project; hydrological cycle, rainfall; rain gauge and rain gauge station, average annual rain fall, run off, flood discharge, unit hydrograph, yield and dependable yield, water requirement of crops, investigation and reservoir planning, dams and spillways, diversion head works, canals, canal regulation, alignment of off-taking channels, metering flumes, canal outlets or modules, cross drainage works, hydro-electric power.

Quantitative Surveying, Estimating & Costing:

Estimating & costing, meaning of the terms, purpose of estimating and costing, types of estimate, detailed estimate, revised estimate, supplementary estimate, maintenance & repair estimate, specification, mode of measurements, rate analysis, taking out quantities of work for roads, dam, canals, railway embankments, cement concrete road; estimate of RCC structures, estimate of culvert & bridges, valuation.

Structural Design & Drafting-I (RCC):

Meaning and purpose of reinforcement, reinforcement steel, types of steel used for reinforcement, permissible stresses in concrete and steel, concrete mix, fixed & continuous beam, working stress method, limit state method, analysis and design of singly reinforced and doubly reinforced sections (LSM), shear, bond and development length (LSM), analysis and design of T-beam (LSM), design of slab (LSM), design of axially loaded column and footing (LSM), prestressed concrete, principal of earth quake engineering.

Structural Design & Drafting-II (Steel Structures)

Types of sections used, grades of steel, strength characteristics, advantages and disadvantages of steel as construction material, design of riveted joint for axially loaded member, eccentric riveted connection, welded connection, design of fillet weld and butt weld subjected to axial load, analysis and design of tension member with welded and riveted connection, analysis and design of axially loaded angle struts with welded and riveted connection, stanchion and columns, simple and built up sections, analysis and design of axially loaded column, design of compound column, design of lacing angles and batten plates, column bases, design of slab base & concrete block, cleat angles, simple and built-up beam sections, design of simple and built-up beams, check for shear, roof truss.

Public Health Engineering:

Demands of water, source of water, quality & purification of water, conveyance and distribution of water.

Sanitary Engineering:

Building sanitation, systems of sewerage, analysis of sewage, treatment of sewage, rural sanitation.