

Syllabus For Contractual Sub-Engineering (Civil), NHM, M.P.

SN	Subject	Marks
1	Civil Engineering Building Materials : Physical and Chemical properties, classification, standard tests, uses and manufacture/quarrying of materials e.g. building stones, cement (Portland), laminates, bituminous materials, paints, varnishes.	10
2	Estimating, Costing and Valuation : estimate, glossary of technical terms, analysis of rates, methods and unit of measurement, Items of work – earthwork, Brick work (Modular & Traditional bricks), RCC work, Shuttering, Timber work, Painting, Flooring, Plastering. Boundary wall, Brick building, Water Tank, Septic tank, Bar bending schedule, Centre line method, Mid-section formula, Trapezoidal formula, Simpson’s rule. Cost estimate of Septic tank, Tube well, isolates and combined footings, Piles and pile-caps. Valuation – Value and cost, scrap value, salvage value, assessed value, sinking fund, methods of valuation, Billing and work Accounts.	20
3	Surveying : Principles of surveying, measurement of distance Levelling, Definition of terms used in levelling, contouring, dumpy level, methods of contouring, uses of contour map, earth work calculation, advanced surveying equipment.	15
4	Concrete Technology : Properties, Advantages and uses of concrete, cement aggregates, importance of water quality, water cement ratio, workability, mix design, storage, batching, mixing, placement, compaction, finishing and curing of concrete, quality control of concrete, hot weather and cold weather concreting, repair and maintenance of concrete structures, BIS Codal refrance of Concrete RCC and Other Construction Material.	15
5	RCC Design : RCC beams-flexural strength, shear strength, bond strength, design of singly reinforced and double reinforced beams, cantilever beams. T-beams, lintels. One way and two way slabs, isolated footings. Reinforced brick works, columns, staircases, retaining wall, water tanks.	10
6	Soil Mechanics : Origin of soil, phase diagram, Definitions-void ratio, porosity, degree of saturation, water content, specific gravity of soil grains, unit weights, density index and interrelationship of different parameters, Grain size distribution curves and their uses Soil compaction, Laboratory compaction test, Bearing capacity of soils, plate load test, standard penetration test.	05
7	Environmental Engineering : Quality of water, source of water supply, purification of water, distribution of water, need of sanitation, sewerage systems, sewer appurtenances, sewage treatments. Surface water drainage. Solid waste management – types, effects, engineered management system.	15
8	Structural Engineering Theory of structures : types of beams – determinate and indeterminate, bending moment and shear force diagrams of simply supported, cantilever and over hanging beams. Moment of area and moment of inertia for rectangular & circular sections, bending moment	10