Syllabus for the post of Executive Engineer – Pay Level 10

Paper I - Subjective and Objective
Total Marks: 80
Duration: 2.5 Hours

1.Construction Material- Basic Building Materials, Stones, Brick, Fine & Coase aggregate, Cement, Lime, Concrete, Timber, Bond & Reinforcement Mortars, Basic Building construction, Finishing, Services, Special Construction, Fire resistance construction.

2.Reinforced Concrete- RCC rectangular beam, T. beams, Slabs, Columns, Footings, Water tanks

3.Fluids Mechanics- Flow and Fluid Properties, Hydrostatic pressure, Buoyancy & Floatation, Kinematics of Fluid flow, Fundamental equation of Fluid Flow, Orifices & Mouthpieces, Notches & Weirs, Dimensional & Model Analyses, Viscus flow, Flow through pipes, Flow through channel.

4.Prestressed Concrete- Pre tensioning, post tensioning.

5.Ultimate Load Theory - RCC members, Underreamed force and over reinforced section, Doubly reinforced beam, Yield strength of reinforcement. Limit state method- Modified stress strain curves for mild steel, Singly & doubly reinforced sections, Limiting Moment of Resistance, Limit state in shear, Limit state in compression.

6.Steel Structure Design- Riveted and Bolt connections, Tension member, Compression member, Steel member subject to bending.

7.Plastic Theory- Plastic bending of beams, Collapse load, Load factor, Plastic modulus, Portal frames, Analysis of simply supported, cantilevered, fixed, continuous beam.

8.Applied Mechanics- Shear force & Bending moment, Stresses in beams, Deflection of beams, Fixed & Continuous beam, Torsion of shafts, Principal stresses & principal plains.

9.Theory of Structure-Strain energy, Archies, Rolling loads & Influence line, Analysis of trusses & frames.

10.Soil Mechanics & Foundation Engineering- Strength parameter, Earth pressure, Theories design of shallow and deep foundation.

11.Transportation Engineering & Surveying- Roads, Super elevation, Ruling gradient, Pavements, Traffic controls, Design consideration.

12. Environmental Engineering- Water supply, Intake of water, Water purification, Water distribution, Sanitation, Sewage treatment & disposal.

13.Surveying- Surveying instruments, Errors & their adjustments, Measurement of distances, directions, height, Chain & Compass survey

14.Water Resource Engineering- Hydrology, Planning of hydro resources, Water requirement for crops, Distribution system for canal irrigation, Revert raining, Water logging, Storage works, Spillways.

15.Construction Planning and Management- Elements of construction practise, Bar charts, CPM, PERT, Estimation & Costing.

16.Repair & Maintenance of Buildings- Need for Maintenance, Agencies Causing Deterioration (Sources, Causes, Effects), Investigation and Diagnosis of Defects, Defects and their root causes, Materials for Repair, maintenance and protection, Remedial Measures for Building Defects.

17.Profession related questions (GFR, RTI/CPWD manual, NBC code, GRIHA norms, Standard codes in constructions like IS code, BIS, ECBC, etc)

18.Language Competency – English Grammar, Comprehension etc.

19.Aptitude Test: Quantitative, Logical reasoning and Verbal ability

20.General Knowledge and Current Affairs: General knowledge about India/World such as Politics, and Current affairs.

21.Software in Construction Management

22.General Engineering Aptitude

23.Project Construction Equipment

24.New Technologies and Material in Construction.

Paper II (Proficiency Test)
Total Marks: 20