Sr. No. 4

Syllabus for JE Civil

Building Materials: Physical and Chemical properties, classification, standardtests, uses and manufacture/quarrying of materials e.g. building stones, silicatebased materials, cement (Portland), Asbestos products, Timber and Wood based Products, laminates, bituminous materials, paints, varnishes

Surveying: Principles of surveying, working of properties, compass and bearing, plane table surveying, theodolite traverse, adjustment of theodolite, levelling andcontouring, curvature, refraction, permanent adjustment of dumpy level, methods of contouring and uses of a control map, tachometric survey.

Soil Mechanics: Origin of soil phase diagram, definitions of void ratio, porosity, degree of saturation, water content, specific gravity of soil grains and unitweights, grain size distribution curves for different solid and their uses Atterjerg's limits, ISI soil classification, plasticity chart, coefficient ofpermeability, effective stress, consolidation of soils.

Calculation of shear strength of soils, direct shear test, vane shear test, triaxialtest, soil compaction, Lab compaction, Lab compaction test, moisture content and bearing capacity of soils, plate load test, standard penetration test.

Hydraulics: Fluid properties, hydrostatics, measurements of flow, Bernoulli's theorem and its application, flow through pipes, flow in open channels, weirs, flumes, spillways, pumps and turbines.

Environmental Engineering: Quality of water, source of water supply, purification of water, distribution of water, need of sanitation, sewerage system, circular sewers, oval sewer, sewer appurtenances, surface water drainage, sewage treatments.

Structural Engineering : Theory of structures: Elasticity constants, type ofbeams, determinate and indeterminate, bending moment and shear forcediagrams of simply supported, cantilever and over hanging beams. Moment of area and moment of inertia

for rect. & circular section, bending moment and shear stress for tee, channel and compound sections, chimneys, dams andretaining walls, eccentric loads, slope deflection of simply supported and cantilever beams, critical load and columns, torsion of circular section.

Concrete Technology : Properties, Advantages and uses of concrete, cement aggregates 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 andmaintenance of concrete structure.

RCC Design

RCC beams: flexural strength, shear strength, bond strength, design of singlereinforced beans, lintels, cantilever beams, double reinforced beams, one wayslabs, two way slabs, isolated footings, reinforced brick work. T-beams, columns,staircases, retaining walls, water tanks (RCC design questions may be based on both Limit State method and Working Stress method).

Steel Design: Steel design and construction of steel columns, beams, rooftrusses, plate girders.

- *Basic Knowledge of land laws i.e. Land Acquisition Act, Land RevenueAct, Hindu Succession Act,*
- *Basic Knowledge of Auto CAD, preparation of two dimensional drawings, basic understanding of elevation and layout plans of markets.*
- *Marketing strategies in real estate.*