

# Syllabus for the Post of JEngg. and Exe.

## Engineering --Civil Engineering

### Syllabus for the Post of JEngg

#### **Building Materials :**

Physical and Chemical properties, classification, standard tests, uses and manufacture/ quarrying of materials e.g. Brick, building stones, cement, sand aggregates, asbestos products, timber and wood based products, laminates, bituminous materials, paints, varnishes, Glass, Aluminium, false ceiling materials. Tiles, ceramic and Vitrified, cement Blocks, Pavers.

#### **Estimating, Costing and Valuation :**

estimate, 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.. Cost estimate of Septic tank, flexible pavements, Tube well, isolates and combined footings, Steel Truss, Piles and pile-caps. Valuation – Value and cost, scrap value, salvage value, assessed value, sinking fund, depreciation and obsolescence, methods of valuation.

#### **Surveying :**

Principles of surveying, measurement of distance, chain and Tape surveying, working of prismatic compass, plane table surveying, theodolite traversing, , Levelling, contouring, , temporary and permanent adjustments of dumpy level, methods of contouring, uses of contour map, tachometric survey, curve setting, earth work calculation, advanced surveying equipment such as total work station, GPS ,

#### **Soil Mechanics :**

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. Index properties of soils, Atterberg's limits, ISI soil classification and plasticity chart. Permeability of soil, coefficient of permeability, determination of coefficient of permeability, effective stress, quick sand, consolidation of soils, Shear strength of soils, direct shear test, Vane shear test, Triaxial test. Soil compaction, Laboratory compaction test, Maximum dry density and optimum moisture content, earth pressure theories, active and passive earth pressures, 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

