

Indicative Syllabus for the MFCP of JE (Civil)-A to JE(Civil)-B

Subject Knowledge of Civil Engineering:

Strength of Material and Theory of Structures Stress Strain Relation – Hooke's Law, Determination of Forces in Members of Trusses- Bending Moments and shear forces. -Theory of Simple Bending, Continuous Beams– Determination of Bending Moments and Shear Forces

Design Principles:

Working Stress and Limit State Design Methods in beams, slabs and columns- steel roof trusses- IS Codes and its Purpose

Concrete Technology:

Nominal Concrete Mix and Design Mix- Basic Principles of Reinforced Concrete: singly and doubly reinforced beams, one way and two way slabs- Column Design- Over and Under Reinforced Beams- Advantages of Precast Structures.

Construction Practice:

General Details of Building Construction Including Foundations, Flooring, Masonry and Different Type of Roofs- Safety During Construction- Durability- General Properties, standard requirements and tests for common building material such as bricks, stones, sand and aggregate, cement, lime, timber and steel- Tests for Fresh and Hardened Concrete.

Central PWD Manual, Rates and Specifications:

Tender procedures, conditions, execution guidelines, standard operating procedures and specifications for building works, sanitary and water supply works and road works including modes of measurements.

Surveying:

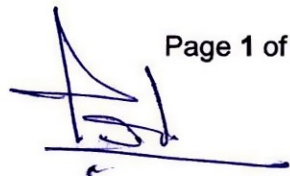
Use and Adjustment of Surveying Instruments: Chain, Plane table and accessories magnetic compass, level and theodolite- Use of Compass- Theodolite: Alignments and adjustments. Leveling - Methods of leveling and reduced level calculations- Contour Survey: Methods of contouring, properties of contours- Curves and Alignment: Setting out of simple, reverse and transition curves using different methods-,vertical curves- Types of EDM methods.

Transportation Engineering:

Types of Pavements- their cross-sectional requirements and interactions- Road Drainage and Maintenance.

Environmental Engineering:

Quality and Quantity of Water Required for Public Water Supplies- Water Purification Processes- Water distribution systems – Valves and Fittings –Sanitary Fittings(function & testing)- Types of Sewage Treatment Systems – Oxidation Ponds – Simple Sedimentation- Recirculation and Filtration – Plant, Contact Beds - Percolating Filters-Septic Tanks.



Geotechnical Engineering:

Properties of soils, classification, soil explorations, methods of determining bearing capacity-
Basic principles of selection of type of foundation for a structure, shallow and deep foundations.
-Compaction- Types of Laboratory and Field Methods for Soil Testing

Quantity Surveying:

Methods of Estimating Quantity- Earthwork Computation-Types of Estimates- Bar Bending
Schedules (BBS)- Analysis of Rates- Tender Documents- Contract types-Basics on Valuation

Software Drawing Tools:

AutoCAD – various functions and its uses



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