



# **All India Institute of Medical Sciences, Jodhpur**

## **Indicative Syllabus for the Examination for the Post of Assistant Engineer (Civil Engineering)**

Please Note: Questions in the Examination may test the candidate's knowledge, skills and aptitude which the Institute expects from a graduate in Civil Engineering with training and experience. The mentioned syllabus is only indicative and not exhaustive. Questions may / may not be related to the below listed topics.

### **Fundamentals of Civil Engineering**

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 pin-jointed frames, Bending Moments and shear forces. Theory of simple bending, Continuous beams and simple portals – Determination of bending moments and shear forces – methods of analysis.

Design Principles Determinations of dead, live and wind, seismic loads – Relevant I.S. Codes, Factor of Safety and Load Factor.

Steel Design, Design of simple Beams and plate Girders according to Indian Standards, Design of single and built-up columns, column base connections, Design of Steel Roof Trusses.

Reinforced Concrete - Basic principles of reinforced concrete, shear, bond and diagonal tension, location of reinforcement, Design of singly and doubly reinforced beams, one way and two way slabs, Theory and design of reinforced concrete columns with uni-directional bending only, Design of cantilever and simple counterfort retaining wall, Liquid retaining structures – Special requirements.

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 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 and Theodolite: Alignments and adjustments. Levelling 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.

Highway Engineering Road alignment in hills and plains, minimum standards for National highways. Principles of design of urban roads, their cross-sectional requirements and interactions, road drainage and maintenance. House paths, approach roads and service lanes.

Public Health Engineering Water Supply: Quality and quantity of water required for public water supplies. Water purification processes. Water distribution systems – valves and fittings – testing.

Sanitation: Orientation, ventilation and damp proofing of buildings. Sanitary appliances Construction and testing of house drains.

Sewage disposal - Sewerage system: - Construction and maintenance. Types of sewage treatment – Oxidation ponds – simple sedimentation, re-circulation and filtration – plant, contact beds - percolating filters. Septic tanks.

Soil Mechanics and Foundation Engineering: Properties of soils, classification, soil explorations, methods of determining bearing capacity.

Foundation Engineering: Principles of selection of type of foundation for a structure, shallow and deep foundations. Compaction; Laboratory and field methods, optimum moisture content, soil stabilization.