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## RBI JE Syllabus Civil Engineer

### RBI JE Exam Pattern for Civil

Part	Subject	Question	Marks	Time
A	English Language	50	50	150 Minutes (separate time for each section)
B	Engineering Discipline Paper I	40	100	
C	Engineering Discipline Paper II	40	100	
D	General Intelligence and Reasoning	50	50	
<b>Total</b>		<b>180</b>	<b>300</b>	

**Note** - Negative marking will be 1/4 marks of each wrong answer

- 1 - There will be 1 Question Papers in Online Exam. ऑनलाइन एग्जाम में 1 प्रश्न पत्र होंगे ।
  - 2 - The questions will be Objective Type. प्रश्न वस्तुनिष्ठ प्रकार के होंगे।
  - 3 - Question Paper will consist 180 Questions. प्रश्न पत्र में 180 प्रश्न होंगे
  - 4 - Question Paper will be of total 300 marks. पेपर कुल 300 अंकों का होगा।
  - 5 - Time duration of exam will be given 150 Minutes. परीक्षा की समय अवधि 150 मिनट दी जाएगी।
  - 6 - Negative marking will be 1/4 marks of each wrong answer. नकारात्मक अंकन प्रत्येक गलत उत्तर के 1/4 अंक होंगे।
  - 7 - Candidate who qualified Online exam will be able to write Language Proficiency Test. प्रारंभिक परीक्षा उत्तीर्ण करने वाले उम्मीदवार को भाषा दक्षता परीक्षा के लिए बुलाया जाएगा।
- Note - Final selection will be on the basis of candidate's performance in the online examination and Language Proficiency Test.

### English Syllabus

Grammar  
Cloze Test  
Reading Comprehension  
Para jumbles  
Miscellaneous  
Fill in the blanks  
Multiple Meaning /Error Spotting  
Paragraph Completion  
One Word  
Antonyms  
Synonyms

## General Intelligence & Reasoning Syllabus

Logical Reasoning  
Alphanumeric Series  
Ranking/Direction/ Alphabet Test  
Data Sufficiency  
Coded Inequalities  
Seating Arrangement  
Puzzle  
Tabulation  
Visual Memory  
Syllogism  
Blood Relations  
Input Output  
Coding Decoding

## Syllabus for Junior Engineer (Civil)

**Paper I:** Building materials, Estimating, Costing and Valuation, Surveying, Soil Mechanics, Hydraulics, Transportation Engineering, Environmental Engineering.

(i) Building Materials: Physical and chemical properties, classification, standard tests, uses and manufacture/quarrying of materials e.g. building stones, silicate based materials, cement (Portland), asbestos products, timber and wood based products, laminates, bituminous materials, paints, varnishes.

(ii) Estimating. Costing and Valuation: estimate, glossary of technical terms, analysis of rates, methods and unit of measurement, item of works-earthwork, Brickwork (Modular & traditional bricks), RCC work, shuttering. Timber work, Painting, flooring and plastering, Boundary wall, Brick building, Water tank, septic tank. Bar bending schedule, Centre line method. Mid-section formula. Trapezoidal formula, Simpson's rule. Cost estimate of Septic tank, flexible pavements. Tube well, isolates and combined footings, Steel Truss, Piles and Piles caps. Valuation-value and cost, scrap value, salvage value, assessed value, sinking fund, depreciation and obsolescence, methods of valuation.

(iii) Surveying: Principles of surveying, measurement of distance, chain surveying, working of prismatic compass, compass traversing, bearings, local attraction, plane table surveying, theodolite traversing, adjustment of theodolite. Leveling, Definition of terms used in leveling, contouring, curvature and refraction corrections, temporary and permanent adjustments of dumpy level, methods of contouring, uses of contour map, tachometric survey, curve setting, earth work calculation, advanced surveying equipment.

(iv) Soil Mechanics : Origin of soil, phase diagram, 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, IS soil classification and plasticity chart. Permeability of soil, coefficient of permeability, determination of coefficient of permeability, Unconfined and confined aquifers, effective stress, quick sand, consolidation of soils. Principles of consolidation, degree of consolidation, preconsolidation pressure normally consolidated soil, e-log p curve, computation of ultimate settlement. 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.

(iv) 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.

(v) Transportation Engineering: High Way Engineering-cross sectional elements, geometric design, types of pavements, pavement materials -aggregates and bitumen, different tests. Design of flexible and rigid pavements -Water Bound Macadam (WBM) and Wet Mix Macadam (WMM), Gravel Road, Bituminous construction. Rigid pavement joint, pavement maintenance. Highway

drainage.

vi) Environmental Engineering : Quality of water, source of water supply, purification of water, distribution of water, need of sanitation, sewerage systems, circular sewer, oval sewer, sewer appurtenances, sewage treatments. Surface water drainage. Solid waste management -types, effects, engineered management system. Air pollution pollutants, causes, effects, control. Noise pollution - cause, health effects, control.

**Paper II:** Theory of structures. Concrete technology, RCC design and Steel design

(i) Theory of structures: Elasticity constants, types of beams-determinate and indeterminate, bending moment and shear force diagrams of simply supported, cantilever and over hanging beams. Moment of area and moment of inertia for rectangular and circular sections, bending moment and shear stress for tee, channel and compound sections, chimneys, dams and retaining walls, eccentric loads, slope deflection of simply supported and cantilever beams, critical load and columns, Torsion of circular section.

(ii) Concrete Technology: Properties, Advantages and uses of concrete, cement aggregates, importance of water 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 and maintenance of concrete structures.

(iii) RCC Design: RCC beams-flexural strength, shear strength, bond strength, design of singly reinforced and double reinforced beams, cantilever beams. T-beams, lintels. One way and two way slabs, isolated footings. Reinforced brick works, columns, staircases, retaining wall, water tanks (RCC design questions may be based on both Limit State and Working Stress methods).

(iv) Steel Design: Steel design and construction of steel columns, beams roof trusses plate girders.



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