

Fundamentals of Engineering (FE)

CIVIL CBT Exam Specifications

| DAY | Topic/ Number of Questions | Knowledge Area | √ | DAY | Topic/ Number of Questions | Knowledge Area | √ |
|-----|---|--|--|-----|--|--|--|
| 1 | 1. Mathematics and Statistics 8-12 | A. Analytic geometry | | 54 | Rest | Rest | |
| 2 | | B. Single-variable calculus | | 55 | 10. Water Resources and Environmental Engineering 10-15 | F. Stormwater (e.g., detention, routing, quality) | |
| 3 | | C. Vector operations | | 56 | | G. Collection systems (e.g., wastewater, stormwater) | |
| 4 | | D. Statistics (e.g., distributions, mean, mode, standard deviation, confidence interval, regression and curve fitting) | | 57 | | H. Groundwater (e.g., flow, wells, drawdown) | |
| 5 | 2. Ethics and Professional Practice 4-6 | A. Codes of ethics (professional and technical societies) | | 58 | | I. Water quality (e.g., ground and surface, basic water chemistry) | |
| 6 | Rest | Rest | | 59 | Rest | J. Testing and standards (e.g., water, wastewater, air, noise) | |
| 7 | 2. Ethics and Professional Practice 4-6 | B. Professional liability | | 60 | Rest | Rest | |
| 8 | | C. Licensure | | 61 | 10. Water Resources and Environmental Engineering 10-15 | K. Water and wastewater treatment (e.g., biological processes, softening, drinking water treatment) | |
| 9 | | D. Contracts and contract law | | 62 | 11. Structural Engineering 10-15 | A. Analysis of statically determinate beams, columns, trusses, and frames | |
| 10 | | 3. Engineering Economics 5-8 | A. Time value of money (e.g., equivalence, present worth, equivalent annual worth, future worth, rate of return) | | | 63 | B. Deflection of statically determinate beams, trusses, and frames |
| 11 | Rest | B. Cost (e.g., fixed, variable, direct and indirect labor, incremental, average, sunk) | | 64 | | C. Column analysis (e.g., buckling, boundary conditions) | |
| 12 | | Rest | | 65 | | D. Structural determinacy and stability analysis of beams, trusses, and frames | |
| 13 | 3. Engineering Economics 5-8 | C. Analyses (e.g., breakeven, benefit-cost, life cycle, sustainability, renewable energy) | | 66 | Rest | Rest | |
| 14 | 4. Statics 8-12 | D. Uncertainty (e.g., expected value and risk) | | 67 | 11. Structural Engineering 10-15 | E. Elementary statically indeterminate structures | |
| 15 | | A. Resultants of force systems | | 68 | | F. Loads, load combinations, and load paths (e.g., dead, live, lateral, influence lines and moving loads, tributary areas) | |
| 16 | | B. Equivalent force systems | | 69 | | G. Design of steel components (e.g., codes and design philosophies, beams, columns, tension members, connections) | |
| 17 | | C. Equilibrium of rigid bodies | | 70 | | H. Design of reinforced concrete components (e.g., codes and design philosophies, beams, columns) | |
| 18 | Rest | Rest | | 71 | 12. Geotechnical Engineering 10-15 | A. Index properties and soil classifications | |
| 19 | 4. Statics 8-12 | D. Frames and trusses | | 72 | Rest | Rest | |
| 20 | | E. Centroid of area | | 73 | 12. Geotechnical Engineering 10-15 | B. Phase relations | |
| 21 | | F. Area moments of inertia | | 74 | | C. Laboratory and field tests | |
| 22 | | G. Static friction | | 75 | | D. Effective stress | |
| 23 | 5. Dynamics 4-6 | A. Kinematics (e.g., particles, rigid bodies) | | 76 | | E. Stability of retaining structures (e.g., active/passive/at-rest pressure) | |
| 24 | Rest | Rest | | 77 | F. Shear strength | | |
| 25 | 5. Dynamics 4-6 | B. Mass moments of inertia | | 78 | Rest | Rest | |
| 26 | | C. Force acceleration (e.g., particles, rigid bodies) | | 79 | 12. Geotechnical Engineering 10-15 | G. Bearing capacity | |
| 27 | | D. Work, energy, and power (e.g., particles, rigid bodies) | | 80 | | H. Foundation types (e.g., spread footings, deep foundations, wall footings, mats) | |
| 28 | | 6. Mechanics of Materials 7-11 | A. Shear and moment diagrams | | | 81 | I. Consolidation and differential settlement |
| 29 | B. Stresses and strains (e.g., diagrams, axial, torsion, bending, shear, thermal) | | | 82 | | J. Slope stability (e.g., fills, embankments, cuts, dams) | |
| 30 | Rest | Rest | | 83 | K. Soil stabilization (e.g., chemical additives, geosynthetics) | | |
| 31 | 6. Mechanics of Materials 7-11 | C. Deformations (e.g., axial, torsion, bending, thermal) | | 84 | Rest | Rest | |
| 32 | | D. Combined stresses, principal stresses, and Mohr's circle | | 85 | 13. Transportation Engineering 9-14 | A. Geometric design (e.g., streets, highways, intersections) | |
| 33 | | E. Elastic and plastic deformations | | 86 | | B. Pavement system design (e.g., thickness, subgrade, drainage, rehabilitation) | |
| 34 | | A. Mix design of concrete and asphalt | | 87 | | C. Traffic capacity and flow theory | |
| 35 | 7. Materials 5-8 | B. Test methods and specifications of metals, concrete, aggregates, asphalt, and wood | | 88 | | D. Traffic control devices | |
| 36 | Rest | Rest | | 89 | E. Transportation planning (e.g., travel forecast modeling, safety, trip generation) | | |
| 37 | 7. Materials 5-8 | C. Physical and mechanical properties of metals, concrete, aggregates, asphalt, and wood | | 90 | Rest | Rest | |
| 38 | 8. Fluid Mechanics 6-9 | A. Flow measurement | | 91 | 14. Construction Engineering 8-12 | A. Project administration (e.g., documents, management, procurement, project delivery methods) | |
| 39 | | B. Fluid properties | | 92 | | B. Construction operations and methods (e.g., safety, equipment, productivity analysis, temporary erosion control) | |
| 40 | | C. Fluid statics | | 93 | | C. Project controls (e.g., earned value, scheduling, allocation of resources, activity relationships) | |
| 41 | | D. Energy, impulse, and momentum of fluids | | 94 | | D. Construction estimating | |
| 42 | Rest | Rest | | 95 | E. Interpretation of engineering drawings | | |
| 43 | 9. Surveying 6-9 | A. Angles, distances, and trigonometry | | 96 | Rest | Rest | |
| 44 | | B. Area computations | | 97 | Test,Review | | |
| 45 | | C. Earthwork and volume computations | | 98 | Test,Review | | |
| 46 | | D. Coordinate systems (e.g., state plane, latitude/longitude) | | 99 | Test,Review | | |
| 47 | | E. Leveling (e.g., differential, elevations, percent grades) | | 100 | Test,Review | | |
| 48 | Rest | Rest | | 101 | Test,Review | | |
| 49 | 10. Water Resources and Environmental Engineering 10-15 | A. Basic hydrology (e.g., infiltration, rainfall, runoff, watersheds) | | 102 | Rest | Rest | |
| 50 | | B. Basic hydraulics (e.g., Manning equation, Bernoulli theorem, open-channel flow) | | 103 | Exam | Exam | |
| 51 | | C. Pumps | | 104 | | | |
| 52 | | D. Water distribution systems | | 105 | | | |
| 53 | | E. Flood control (e.g., dams, routing, spillways) | | 106 | | | |

