

# NCEES Principles and Practice of Engineering Examination

## Civil Construction

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

