

NCEES Principles and Practice of Engineering Examination

PE Civ Transportation

DAY	Topic/ Number of Questions	Knowledge Area	V	DAY	Topic/ Number of Questions	Knowledge Area	V
1	I. Project Planning 4	A. Quantity take-off methods		55	VIII. Site Development 5	E. Safety (e.g., construction, roadside, work zone)	
2		B. Cost estimating		56	I. Traffic Engineering (Capacity Analysis and Transportation Planning) 11	A. Uninterrupted flow (e.g., level of service, capacity)	
3		C. Project schedules		57		B. Street segment interrupted flow (e.g., level of service, running time, travel speed)	
4		D. Activity identification and sequencing		58		C. Intersection capacity (e.g., at grade, signalized, roundabout, interchange)	
5	II. Means and Methods 3	A. Construction loads		59		D. Traffic analysis (e.g., volume studies, peak hour factor, speed studies, modal split)	
6	Rest	Rest		60	Rest		
7	II. Means and Methods 3	B. Construction methods		61	I. Traffic Engineering (Capacity Analysis and Transportation Planning) 11	E. Trip generation and traffic impact studies	
8		C. Temporary structures and facilities		62		F. Accident analysis (e.g., conflict analysis, accident rates, collision diagrams)	
9	III. Soil Mechanics 6	A. Lateral earth pressure		63		G. Nonmotorized facilities (e.g., pedestrian, bicycle)	
10		B. Soil consolidation		64		H. Traffic forecast	
11		C. Effective and total stresses		65	I. Highway safety analysis (e.g., crash modification factors, Highway Safety Manual)		
12	Rest	Rest		66	Rest		
13	III. Soil Mechanics 6	D. Bearing capacity		67	II. Horizontal Design 4	A. Basic curve elements (e.g., middle ordinate, length, chord, radius)	
14		E. Foundation settlement		68		B. Sight distance considerations	
15		F. Slope stability		69		C. Superelevation (e.g., rate, transitions, method, components)	
16	IV. Structural Mechanics 6	A. Dead and live loads		70		D. Special horizontal curves (e.g., compound/reverse curves, curve widening, coordination with vertical geometry)	
17		B. Trusses		71	III. Vertical Design 4	A. Vertical curve geometry	
18	Rest	Rest		72	Rest		
19	IV. Structural Mechanics 6	C. Bending (e.g., moments and stresses)		73	III. Vertical Design 4	B. Stopping and passing sight distance (e.g., crest curve, sag curve)	
20		D. Shear (e.g., forces and stresses)		74		C. Vertical clearance	
21		E. Axial (e.g., forces and stresses)		75		IV. Intersection Geometry 4	A. Intersection sight distance
22		F. Combined stresses		76	B. Interchanges (e.g., freeway merge, entrance and exit design, horizontal design, vertical design)		
23		G. Deflection		77	C. At-grade intersection layout, including roundabouts		
24	Rest	Rest		78	Rest		
25	IV. Structural Mechanics 6	H. Beams		79	V. Roadside and Cross-Section Design 4	A. Forgiving roadside concepts (e.g., clear zone, recoverable slopes, roadside obstacles)	
26		I. Columns		80		B. Barrier design (e.g., barrier types, end treatments, crash cushions)	
27		J. Slabs		81		C. Cross-section elements (e.g., lane widths, shoulders, bike lane, sidewalks)	
28		K. Footings		82		D. Americans with Disabilities Act (ADA) design considerations	
29		L. Retaining walls		83	VI. Signal Design 3	A. Signal timing (e.g., clearance intervals, phasing, pedestrian crossing timing, railroad preemption)	
30	Rest	Rest		84	Rest		
31	V. Hydraulics and Hydrology 7	A. Open-channel flow		85	VI. Signal Design 3	B. Signal warrants	
32		B. Stormwater collection and drainage (e.g., culvert, stormwater inlets, gutter flow, street flow, storm sewer pipes)		86	VII. Traffic Control Design 3	A. Signs and pavement markings	
33		C. Storm characteristics (e.g., storm frequency, rainfall measurement and distribution)		87		B. Temporary traffic control	
34		D. Runoff analysis (e.g., Rational and SCS/NRCS methods, hydrographic application, runoff time of concentration)		88		VIII. Geotechnical and Pavement 4	A. Sampling and testing (e.g., subgrade resilient modulus, CBR, R-Values, field tests)
35		E. Detention/retention ponds		89	B. Soil stabilization techniques, settlement and compaction, excavation, embankment, and mass balance		
36	Rest	Rest		90	Rest		
37	V. Hydraulics and Hydrology 7	F. Pressure conduit (e.g., single pipe, force mains, Hazen-Williams, Darcy-Weisbach, major and minor losses)		91	VIII. Geotechnical and Pavement 4	C. Design traffic analysis and pavement design procedures (e.g., flexible and rigid pavement)	
38		G. Energy and/or continuity equation (e.g., Bernoulli)		92		D. Pavement evaluation and maintenance measures (e.g., skid, roughness, rehabilitation treatments)	
39	VI. Geometrics 3	A. Basic circular curve elements (e.g., middle ordinate, length, chord, radius)		93	IX. Drainage 2	A. Hydrology (e.g., Rational method, hydrographs, SCS/NRCS method), including runoff detention/retention/water quality mitigation measures	
40		B. Basic vertical curve elements		94		B. Hydraulics, including culvert and stormwater collection system design (e.g., inlet capacities, pipe flow, hydraulic energy dissipation), and open-channel flow	
41		C. Traffic volume (e.g., vehicle mix, flow, and speed)		95	X. Alternatives Analysis 1	A. Economic analysis (e.g., present worth, lifecycle costs)	
42	Rest	Rest		96	Rest		
43	VII. Materials 6	A. Soil classification and boring log interpretation		97	Test,Review	Test,Review	
44		B. Soil properties (e.g., strength, permeability, compressibility, phase relationships)		98		Test,Review	
45		C. Concrete (e.g., nonreinforced, reinforced)		99		Test,Review	
46		D. Structural steel		100		Test,Review	
47		E. Material test methods and specification conformance		101		Test,Review	
48	Rest	Rest		102	Rest		
49	VII. Materials 6	F. Compaction		103	Exam		
50	VIII. Site Development 5	A. Excavation and embankment (e.g., cut and fill)					
51		B. Construction site layout and control					
52		C. Temporary and permanent soil erosion and sediment control (e.g., construction erosion control and permits, sediment transport, channel/outlet protection)					
53		D. Impact of construction on adjacent facilities					
54	Rest	Rest					

