

## NCEES Principles and Practice of Engineering Examination

## PE Water Resources &amp; Environmental

DAY	Topic/ Number of Questions	Knowledge Area	V	DAY	Topic/ Number of Questions	Knowledge Area	V	
1	I. Project Planning 4	I. Project Planning 4		66	Rest	Rest		
2		A. Quantity take-off methods		67	III. Hydraulics–Open Channel 5	III. Hydraulics–Open Channel 5		
3		B. Cost estimating		68		A. Open-channel flow		
4		C. Project schedules		69		B. Hydraulic energy dissipation		
5	D. Activity identification and sequencing		70	C. Stormwater collection and drainage (e.g., culvert, stormwater inlets, gutter flow, street flow, storm sewer pipes)				
6	Rest	Rest		71	D. Sub- and supercritical flow			
7	II. Means and Methods 3	A. Construction loads		72	Rest	Rest		
8		B. Construction methods		73	IV. Hydrology 7	A. Storm characteristics (e.g., storm frequency, rainfall measurement, and distribution)		
9		C. Temporary structures and facilities		74		B. Runoff analysis (e.g., Rational and SCS/NRCS methods)		
10	III. Soil Mechanics 6	A. Lateral earth pressure		75		C. Hydrograph development and applications, including synthetic hydrographs		
11		B. Soil consolidation		76		D. Rainfall intensity, duration, and frequency		
12	Rest	Rest		77		E. Time of concentration		
13	III. Soil Mechanics 6	C. Effective and total stresses		78	Rest	Rest		
14		D. Bearing capacity		79	IV. Hydrology 7	F. Rainfall and stream gauging stations		
15		E. Foundation settlement		80		G. Depletions (e.g., evaporation, detention, percolation, and diversions)		
16		F. Slope stability		81		H. Stormwater management (e.g., detention ponds, retention ponds, infiltration systems, and swales)		
17	IV. Structural Mechanics 6	A. Dead and live loads		82		A. Aquifers		
18	Rest	Rest		83		B. Groundwater flow		
19	IV. Structural Mechanics 6	B. Trusses		84	Rest	Rest		
20		C. Bending (e.g., moments and stresses)		85	V. Groundwater and Wells 3	C. Well analysis–steady state		
21		D. Shear (e.g., forces and stresses)		86	VI. Wastewater Collection and Treatment 6	A. Wastewater collection systems (e.g., lift stations, sewer networks, infiltration, inflow, smoke testing, maintenance, and odor control)		
22		E. Axial (e.g., forces and stresses)		87		B. Wastewater treatment processes		
23		F. Combined stresses		88		C. Wastewater flow rates		
24		Rest	Rest			89	D. Preliminary treatment	
25	IV. Structural Mechanics 6	G. Deflection		90		Rest	Rest	
26		H. Beams		91		VI. Wastewater Collection and Treatment 6	E. Primary treatment	
27		I. Columns		92	F. Secondary treatment (e.g., physical, chemical, and biological processes)			
28		J. Slabs		93	G. Nitrification/denitrification			
29	K. Footings		94	H. Phosphorus removal				
30	Rest	Rest		95	I. Solids treatment, handling, and disposal			
31	IV. Structural Mechanics 6	L. Retaining walls		96	Rest	Rest		
32	V. Hydraulics and Hydrology 7	A. Open-channel flow		97	VI. Wastewater Collection and Treatment 6	J. Digestion		
33		B. Stormwater collection and drainage (e.g., culvert, stormwater inlets, gutter flow, street flow, storm sewer pipes)		98		K. Disinfection		
34		C. Storm characteristics (e.g., storm frequency, rainfall measurement and distribution)		99		L. Advanced treatment (e.g., physical, chemical, and biological processes)		
35		D. Runoff analysis (e.g., Rational and SCS/NRCS methods, hydrographic application, runoff time of concentration)		100		VII. Water Quality 3	A. Stream degradation	
36	Rest	Rest		101	B. Oxygen dynamics			
37	V. Hydraulics and Hydrology 7	E. Detention/retention ponds		102	Rest	Rest		
38		F. Pressure conduit (e.g., single pipe, force mains, Hazen-Williams, Darcy-Weisbach, major and minor losses)		103	VII. Water Quality 3	C. Total maximum daily load (TMDL) (e.g., nutrient contamination, DO, load allocation)		
39		G. Energy and/or continuity equation (e.g., Bernoulli)		104		D. Biological contaminants		
40	VI. Geometrics 3	A. Basic circular curve elements (e.g., middle ordinate, length, chord, radius)		105		E. Chemical contaminants, including bioaccumulation		
41		B. Basic vertical curve elements		106	VIII. Drinking Water Distribution and Treatment 6	A. Drinking water distribution systems		
42	Rest	Rest		107		B. Drinking water treatment processes		
43	VI. Geometrics 3	C. Traffic volume (e.g., vehicle mix, flow, and speed)		108	Rest	Rest		
44	VII. Materials 6	A. Soil classification and boring log interpretation		109	VIII. Drinking Water Distribution and Treatment 6	C. Demands		
45		B. Soil properties (e.g., strength, permeability, compressibility, phase relationships)		110		D. Storage		
46		C. Concrete (e.g., nonreinforced, reinforced)		111		E. Sedimentation		
47		D. Structural steel		112		F. Taste and odor control		
48	Rest	Rest		113		G. Rapid mixing (e.g., coagulation)		
49	VII. Materials 6	E. Material test methods and specification conformance		114	Rest	Rest		
50		F. Compaction		115	VIII. Drinking Water Distribution and Treatment 6	H. Flocculation		
51	VIII. Site Development 5	A. Excavation and embankment (e.g., cut and fill)		116		I. Filtration		
52		B. Construction site layout and control		117		J. Disinfection, including disinfection byproducts		
53		C. Temporary and permanent soil erosion and sediment control (e.g., construction erosion control and permits, sediment transport, channel/outlet protection)		118		K. Hardness and softening		
54	Rest	Rest		119	IX. Engineering Economics Analysis 1	A. Economic analysis (e.g., present worth, lifecycle costs, comparison of alternatives)		
55	D. Impact of construction on adjacent facilities		120	Rest		Rest		

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DAY	Topic/ Number of Questions	Knowledge Area	√	DAY	Topic/ Number of Questions	Knowledge Area	√
56	VIII. Site Development 5	E. Safety (e.g., construction, roadside, work zone)		121		Test,Review	
57		A. Mass balance		122		Test,Review	
58	I. Analysis and Design 4	B. Hydraulic loading		123	Test,Review	Test,Review	
59		C. Solids loading (e.g., sediment loading, sludge)		124		Test,Review	
60	Rest	Rest		125		Test,Review	
61	I. Analysis and Design 4	D. Hydraulic flow measurement		126	Rest	Rest	
62		A. Energy and/or continuity equation (e.g., Bernoulli, momentum equation)		127	Exam	Exam	
63	II. Hydraulics-Closed Conduit 5	B. Pressure conduit (e.g., single pipe, force mains, Hazen-Williams, Darcy-Weisbach, major and minor losses)		128			
64		C. Pump application and analysis, including wet wells, lift stations, and cavitation		129			
65		D. Pipe network analysis (e.g., series, parallel, and loop networks)		130			

