

NCEES Principles and Practice of Engineering Examination
ARCHITECTURAL ENGINEERING

DAY	Topic/ Number of Questions	Knowledge Area	✓	DAY	Topic/ Number of Questions	Knowledge Area	✓	
1	I. Building Systems Integration 12	A. Aspects of building performance that affect human comfort (e.g., vibration, noise, lighting, climate control)	44	III. Mechanical Systems 22	P. Static pressure calculations (e.g., NPSH, static height, pressure in building)			
2		B. Building envelope analysis for integrity and efficiency	45					Q. Equipment selection (e.g., pumps, air handling units, chillers, boilers)
3		C. Impact of one system on another (e.g., lighting load on air-conditioning system capacity)	46					R. Sequences of operation for building controls
4		D. Life safety systems (e.g., generators, smoke control, exit lighting, fire alarms)	47					S. Domestic water systems (e.g., routing, sizing)
5		E. Comparative systems efficiencies (including calculations for energy use and materials)	48					Rest
6	Rest	Rest	49	III. Mechanical Systems 22	T. Sanitary waste and vent systems (e.g., routing, sizing, slope, invert)			
7	I. Building Systems Integration 12	F. Sustainability in design and construction (e.g., energy efficiency, indoor air quality, water conservation)	50		U. Stormwater systems			
8		G. Applicable standards, codes, and regulations (e.g., NFPA, ASHRAE, ICC, ADA)	51		V. Fire protection sprinkler and standpipe systems			
9		H. Building plans, specifications, and models	52		IV. Structural Systems 16	A. Types of construction (e.g., structural steel, timber, concrete, masonry)		
10	II. Electrical Systems 22	A. Electrical power systems, including load flow and distribution	53	B. Component forces (e.g., tension, compression, bending, shear)				
11	II. Electrical Systems 22	B. Short circuit analysis	54	Rest	Rest			
12		Rest	Rest	55	IV. Structural Systems 16	C. Structural load effects on electrical, mechanical, and structural systems (e.g., seismic, wind, thermal, vibrations)		
13		II. Electrical Systems 22	C. Grounding principles	56		D. Connections (e.g., bolted, welded, base plates, brackets)		
14			D. Electrical construction methods and materials	57		E. Loads (e.g., gravity, lateral, temperature, settlement, construction)		
15			E. Overcurrent protection methods and device coordination	58		F. Analysis of trusses, frames, and shear walls		
16			F. Branch circuit and feeder conductor sizing	59		G. Analysis of construction systems (e.g., staging, bracing, loads)		
17			G. Power factor correction	60		Rest	Rest	
18	Rest	Rest	61	IV. Structural Systems 16		H. Analysis of stability (e.g., column buckling, beam lateral torsion buckling, static stability)		
19	II. Electrical Systems 22	H. Voltage drop calculations	62		I. Analysis of deflection (e.g., bending, elongation, shortening, lateral)			
20		I. One-line diagram	63		J. Design of structural components (e.g., steel beam, wood column, economy)			
21		J. Fire alarm design principles	64		K. Foundations (e.g., piles, piers, spread)			
22		K. Lighting calculations (e.g., LPD, zonal cavity)	65		L. Material characteristics of steel, concrete, masonry and timber (e.g., strength, stiffness, hardness, fatigue concerns)			
23		L. Lighting control	66	Rest	Rest			
24	Rest	Rest	67	V. Project Management and Construction Administration 8	A. Differing site conditions			
25	II. Electrical Systems 22	M. Receptacle layout	68		B. Alternates (e.g., bid alternates, substitutions, prior approvals)			
26		A. Heat gain and loss calculations	69		C. Contract administration correspondence (e.g., request for information, architect's supplemental instruction, change order, progress report, quality control)			
27		B. HVAC system analysis and selection (e.g., air cooled/water cooled, all air, heat pumps, split systems)	70		D. Construction documents and the submittal process			
28		C. Energy calculations	71		E. System conflict resolution			
29		D. Ventilation and pressurization (e.g., outside air requirements, exhaust, kitchen hoods, fume hoods, infiltration)	72	Rest	Rest			
30	Rest	Rest	73	V. Project Management and Construction Administration 8	F. Scheduling of design tasks, sequence of activities, CPM			
31	III. Mechanical Systems 22	E. Indoor air quality	74		G. Quality control			
32		F. Air distribution	75		H. Legal issues (e.g., contracts, impact of decisions that may result in lawsuit, errors and omissions)			
33		G. Psychrometrics	76		Rest	Rest		
34		H. Hydronic and steam systems	77	Test,Review	Test,Review			
35	I. Fan laws	78	Test,Review					
36	Rest	Rest	79		Test,Review			
37	III. Mechanical Systems 22	J. Pump laws	80		Test,Review			
38		K. Pressure loss calculations in ductwork and piping	81		Rest	Rest		
39		L. Materials and methods (e.g., ductwork, piping materials, insulation)	82	Exam	Exam			
40		M. Piping for specialty systems (e.g., fuel oil, natural gas, refrigerant)	83					
41	N. Pipe expansion (e.g., expansion joints, loops, anchors)							
42	Rest	Rest						
43	III. Mechanical Systems 22	O. Flow and riser diagrams (e.g., primary/secondary, variable primary, flow balance, hydraulic bridge location)						

