

**NCEES Principles and Practice of Engineering Examination  
 ELECTRICAL AND COMPUTER—POWER CBT Exam Specifications  
 Specifications Effective Beginning with the January 2021 Examination  
 Codes and Standards Valid through September 2023**

- **The exam topics have not changed since April 2018 when they were originally published.**
- The PE Power exam is computer-based. It is closed book with an electronic reference. Codes and standards applicable to the PE Power exam are shown on the last page.
- Examinees have 9 hours to complete the exam, which contains 80 questions. The 9-hour time includes a tutorial and an optional scheduled break. Examinees work all questions.
- The exam uses both the International System of units (SI) and the US Customary System (USCS).
- The exam is developed with questions that will require a variety of approaches and methodologies, including design, analysis, and application. Some questions may require knowledge of engineering economics.
- The knowledge areas specified as examples of kinds of knowledge are not exclusive or exhaustive categories.

	<b>Number of Questions</b>
<b>1. General Power Engineering</b>	<b>21–32</b>
A. Measurement and Instrumentation	4–6
1. Instrument transformers	
2. Insulation testing	
3. Ground resistance testing	
B. Applications	7–11
1. Lightning protection	
2. Surge protection	
3. Reliability	
4. Illumination/lighting and energy efficiency	
5. Demand calculations	
6. Energy management	
7. Engineering economics	
8. Grounding	
C. Codes and Standards	10–15
1. National Electrical Code (NFPA 70, NEC-2017)	
2. National Electrical Safety Code (ANSI C2, NESC-2017)	
3. Standard for Electrical Safety in the Workplace: Shock and Burns (NFPA 70E-2018)	
4. Hazardous area classification (NFPA 497-2017, 499-2017, 30B-2015)	

<b>2. Circuits</b>	<b>14–21</b>
A. Analysis	8–12
1. Three-phase circuits	
2. Symmetrical components	
3. Per unit system	
4. Phasor diagrams	
5. Single-phase circuits	
6. DC circuits	
7. Single-line diagrams	
B. Devices and Power Electronic Circuits	6–9
1. Battery characteristics and ratings	
2. Power supplies and converters	
3. Relays, switches, and ladder logic	
4. Variable-speed drives	
<b>3. Rotating Machines and Electric Power Devices</b>	<b>14–21</b>
A. Induction and Synchronous Machines	7–11
1. Generator/motor applications	
2. Equivalent circuits and characteristics	
3. Motor starting	
4. Electrical machine theory	
B. Electric Power Devices	7–11
1. Transformers	
2. Reactors	
3. Testing	
4. Capacitors	
<b>4. Transmission and Distribution (High, Medium, and Low Voltage)</b>	<b>21–32</b>
A. Power System Analysis	10–15
1. Voltage drop	
2. Voltage regulation	
3. Power factor correction and voltage support	
4. Power quality	
5. Fault current analysis	
6. Transformer connections	
7. Transmission line models	
8. Power flow	
9. Power system stability	
B. Protection	11–17
1. Overcurrent protection	
2. Protective relaying (e.g., differential, distance, undervoltage, pilot)	
3. Protective devices (e.g., fuses, breakers, reclosers)	
4. Coordination	

**NCEES Principles and Practice of Engineering Examination  
PE ELECTRICAL AND COMPUTER—POWER Codes and Standards**

**Effective Beginning January 1, 2021**

**Codes and Standards Valid through September 2023**

The following codes and standards will be supplied to examinees on exam day as an electronic pdf file in the exam if they are required to answer an exam question. Solutions to exam questions that reference a standard of practice are scored based on this list and the revision year shown. Solutions based on other standards will not receive credit.

<b>STANDARD</b>	<b>TITLE</b>
<b>NFPA 30B-2015</b>	Code for the Manufacture and Storage of Aerosol Products
<b>NFPA 70-2017</b>	National Electric Code®
<b>NFPA 70E-2018</b>	Standard for Electrical Safety in the Workplace
<b>NFPA 497-2017</b>	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
<b>NFPA 499-2017</b>	Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
<b>ANSI C2-2017</b>	2017 National Electrical Safety Code®