

CESW Exam Weighted Criteria Table

The following table indicates the approximate percentage (%) of exam content (exam items) for the four (4) major domain areas and the sub-components of those domain areas:

I. Understand Electrical Safety-Related Work Practices	19%
A. Identify and define terminology related to electrical safety	
B. Define requirements to be qualified to work on electrical equipment and systems	
C. Recognize potential electrical hazards	
i. Identify the hazards associated with energized electrical conductors and circuit parts	
a. Explain when a shock hazard exists	
b. Explain when an arc flash and arc blast hazard exists	
c. Identify how hazards change with respect to location in the system or equipment	
ii. Explain the relationship between electrical hazards and potential injuries	
a. Contact injuries (e.g., current flow through tissue, burn)	
b. Arc flash and arc blast injuries (e.g., thermal burn, hearing damage, concussion)	
iii. Identify methods to control the risk associated with electrical hazards	
a. Hazard elimination (i.e., create an electrically-safe work condition)	
b. Substitution (e.g., use of non-electrical equipment, battery-operated hand tools)	
c. Engineering control (e.g., GFCIs, barriers)	
d. Awareness controls (e.g., signs, labels, barricades)	
e. Administrative controls (e.g., training, job planning, procedures)	
f. Personal protective equipment (e.g., insulated tools, arc-rated apparel, voltage-rated gloves)	
D. Determine the nominal voltage of exposed energized electrical conductors and circuit parts	
E. Distinguish exposed energized electrical conductors and circuit parts from other parts of electrical equipment	
F. Identify emergency procedures for assisting victims of electrical incidents	
i. Identify methods of release from contact	
ii. Identify emergency response requirements	
G. Identify requirements for a job briefing	
H. Understand worker responsibility to implement employer's electrical safety program	
II. Establish an Electrically-Safe Work Condition	20%
A. Identify requirements for de-energization according to employer program	
B. Explain how to identify all possible sources of electric supply	
i. Interpret a single-line diagram	
ii. Identify the power sources and disconnecting means	
C. Understand how to properly interrupt the load current(s) and open the disconnecting device(s) for all electrical sources	
i. Differentiate between load-break and a non-load-break switch and/or disconnect	
ii. Visually verify isolation where possible	
D. Identify and apply lockout/tagout (LOTO) devices in accordance with a documented and established policy	
E. Identify the steps to verify the absence of voltage	
F. Identify temporary protective grounding equipment requirements (include 120.3)	
G. Identify the components and elements of the LOTO program and procedures	
i. Training	
ii. Procedures	
iii. Forms of control	
a. Simple	

- b. Complex
- iv. Coordination
- v. Equipment
- vi. Elements of control

III. Identify Precautionary Techniques for Work Involving Electrical Hazards

22%

- A. Identify justification for not establishing an electrically-safe work condition
 - i. Greater hazard to de-energize
 - ii. Infeasibility
 - iii. Less than 50 volts (consider capacity)
- B. Determine energized electrical work permit requirements
 - i. Identify the permit elements
 - ii. Identify exemptions to the permit
- C. Define the requirements for reenergizing circuits after operation of overcurrent protective devices (OCPD)
- D. Understand the use of test instruments
 - i. Understand rating requirements
 - ii. Verify the operation of the test instruments and accessories
 - iii. Select test instruments and equipment appropriate for the environment
 - iv. Perform visual and mechanical inspection of the test instruments and equipment
- E. Understand the use of other equipment
 - i. Understand the appropriate use of portable electric equipment
 - ii. Perform field tests of GFCI protection devices in accordance with the manufacturer's recommendations
 - iii. Perform visual and mechanical inspections of portable electric equipment and cord sets
- F. Identify alerting techniques
 - i. Signs and tags
 - ii. Barricades
 - iii. Attendants
 - iv. Look-alike equipment

IV. Perform an electrical hazard risk assessment

39%

- A. Identify the components of a shock risk assessment
 - i. Explain how to identify the voltage of electrical conductors and circuit parts
 - ii. Explain how to identify the approach boundaries for shock protection
 - iii. Describe the limited approach boundary and its use
 - iv. Describe the restricted approach boundary and its use
- B. Identify the components of an arc flash risk assessment
 - i. Describe incident energy
 - ii. Identify the effect of clearing time, short circuit current, and worker distance on incident energy
 - iii. Interpret hazard information conveyed on equipment labels
 - iv. Describe the arc flash boundary
 - v. Explain how to apply the arc flash boundary
 - vi. Interpret hazard/risk category classifications
 - a. Understand that the tables incorporate risk
 - b. Understand that the tables are task/equipment based
 - c. Identify table limiting parameters
- C. Determine PPE requirements for electrical hazards
 - i. Types
 - a. Head, face, neck, and chin protection

- b. Eye protection
- c. Hearing protection
- d. Body protection
 - 1. Arc-rated garments
 - 2. Layering
 - 3. Underlayers
- e. Hand and arm protection
- f. Foot and leg protection
- ii. Identify the requirements for the care and maintenance of PPE
 - a. Testing
 - b. Inspection
 - c. Care, maintenance, and storage
- iii. Prohibited materials
- iv. Ratings
 - a. Voltage
 - b. Arc
- v. Limitations
- vi. Use Table H.3(a) and H.3(b) in Annex H to select appropriate PPE when an incident energy analysis is performed and PPE requirements are not provided
- vii. Identify PPE requirements when using the hazard/risk category classification method
- D. Select other protective equipment (e.g., insulated tools, ladders, shields)
- E. Anticipate equipment failure