

Specific Competencies and Skills Tested in this Assessment:

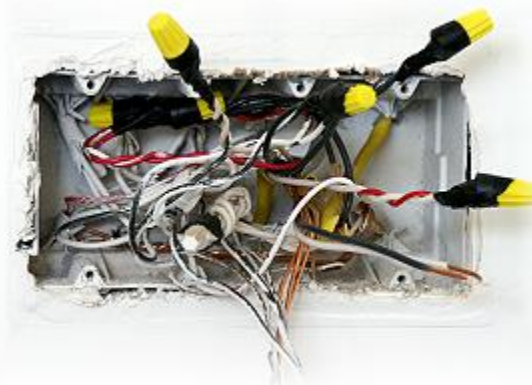
Safety

- Apply shop safety rules and ergonomics
- Explain fire prevention guidelines and methods
- Describe lock-out/tag-out procedures
- Describe procedures for responding to electrical hazards and shock emergencies
- Explain OSHA job site requirements
- Demonstrate the proper use of ladders, scaffolding, and fall protection



Wiring Methods

- Describe and demonstrate the proper installation and use of cable
- Describe and demonstrate the proper use of conduit and other raceways
- Install devices according to manufacturer's specifications and applicable codes
- Identify and select appropriate rough-in materials
- Select and install proper service entrance materials
- Display understanding of low-voltage wiring systems (doorbells, landscape, lighting systems)
- Identify and install communications cable applications
- Demonstrate proper grounding methods and concepts



Tools

- Identify and use hand and power tools
- Identify and use measuring devices and instruments



Specific Competencies and Skills continued:

Motors and Motor Control

- Identify types of single-phase and three-phase AC motors
- Identify types of motor control circuits and components
- Describe the operation of a motor control circuit given a ladder diagram
- Identify overcurrent protection devices and their purposes
- Identify capacitors, relays, switches, and contacts



National Electrical Code

- Locate and reference the National Electrical Code (NEC)
- Identify minimum wire sizes according to NEC ampacity charts
- Identify NEC requirements for appliances and special circuits
- Cite physical layout requirements for receptacles in accordance with NEC
- Identify areas requiring GFCI protection
- Indicate clearances for services according to NEC
- Identify installation methods and types of grounding in accordance with NEC
- Explain NEC color coding pertaining to identification of conductors
- Identify areas requiring ARC fault protection
- Identify box sizing requirements

Blueprint Reading

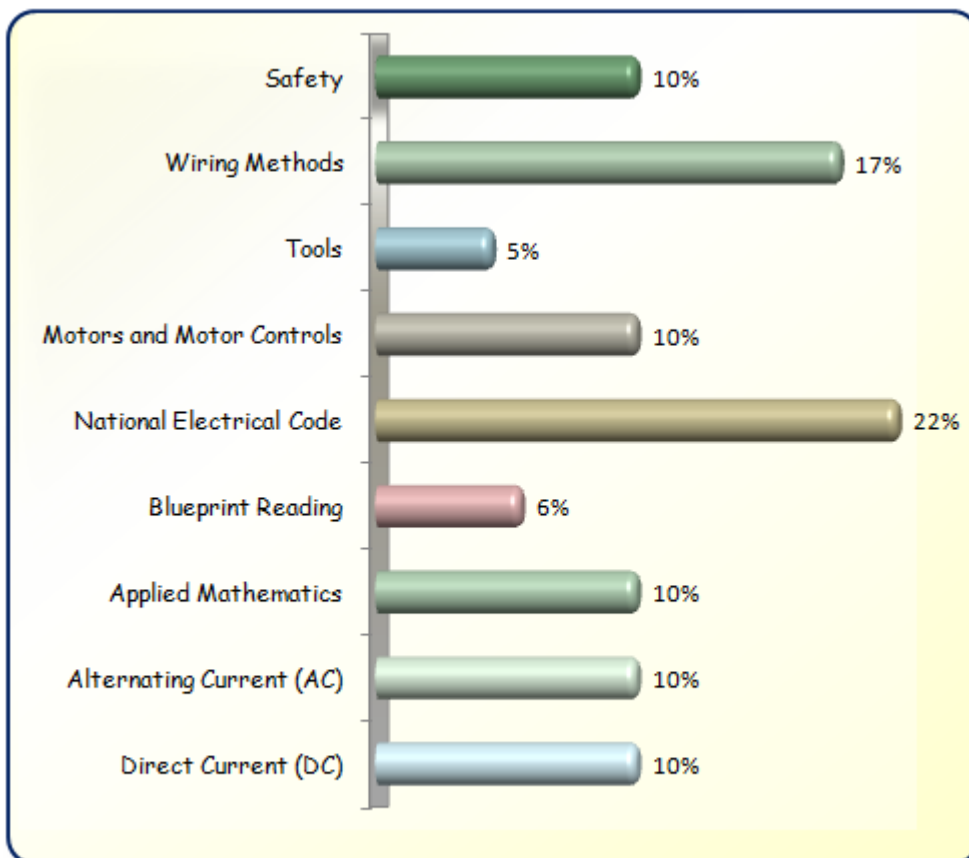
- Interpret and use specifications, prints, drawings, diagrams, and scales
- Identify electrical and electronic symbols and drawing conventions
- Identify and draw a working circuit according to specifications

Written Assessment:

Administration Time: 3 hours

Number of Questions: 171

Areas Covered:



Sample Questions:

On scaffolding, the toe-boards must be a minimum of _____ high.

- A. 1-1/2 inches
- B. 3-1/2 inches
- C. 5-1/2 inches
- D. 6-1/2 inches

A service drop to a building refers to a service that is

- A. underground
- B. overhead
- C. terminated
- D. disconnected

The insulation value of a motor's windings is tested with a/an

- A. megohmmeter
- B. voltmeter
- C. ammeter
- D. wattmeter

The start switch used to energize a magnetic contactor in a motor control is

- A. normally open
- B. normally closed
- C. a high voltage switch
- D. a low voltage switch

For small appliance circuits, the smallest size wire allowed is

- A. #10
- B. #12
- C. #14
- D. #16



Performance Assessment:

Administration Time: 3 hours and 25 minutes

Number of Jobs: 4

Areas Covered:

38% Install Cable from Meter Base to Service Entrance Panel

Select tools, mount and install meter base and panel, install and attach SEU cable and bond the panel, check phases, and time to complete Job 1.

10% Install GFCI Circuit Breaker in Existing 100 AMP Panel

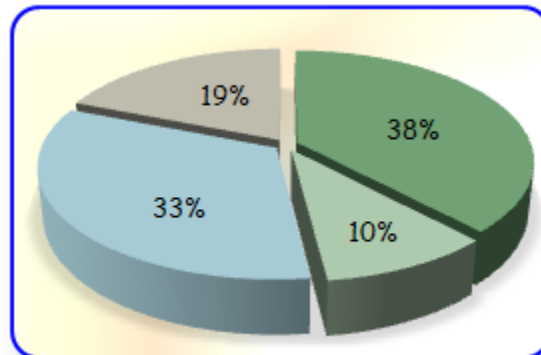
Insert a GFCI circuit breaker, and time to complete Job 2.

33% Wire Lighting Control

Selection of tools, drawing completion, wire for three-way switches, wire for four-way switch, identify white wire, test lighting control, and time to complete Job 3.

19% Install Door Chimes

Drawing completion, selection of tools, door chime installation, test door chimes, verify voltage, and time to complete Job 4.



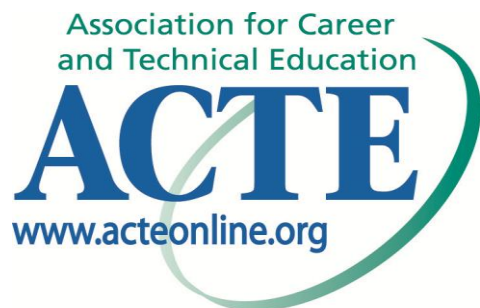
Sample Job: Install GFCI Circuit Breaker in Existing 100 AMP Panel

Maximum Time: 15 minutes

Participant Activity: The participant will insert a 20 AMP single-pole GFCI circuit breaker in existing 100 AMP panel.



The Association for Career and Technical Education (ACTE), the leading professional organization for career and technical educators, commends all students who participate in career and technical education programs and choose to validate their educational attainment through rigorous technical assessments. In taking this assessment you demonstrate to your school, your parents and guardians, your future employers and yourself that you understand the concepts and knowledge needed to succeed in the workplace. Good Luck!



The Pennsylvania Builder's Association utilizes this assessment to assist in determining competencies for granting skill certificates to students graduating from Pennsylvania secondary trade programs that have been endorsed by the Pennsylvania Builders Association (PBA).

PBA's services include support to workforce training and education by linking industry employers with educators to grow the workforce of tomorrow. PBA serves Pennsylvania communities and consumers through its steadfast efforts to protect homeownership rights and advocate for affordable housing options. PBA is affiliated with the National Association of Home Builders.