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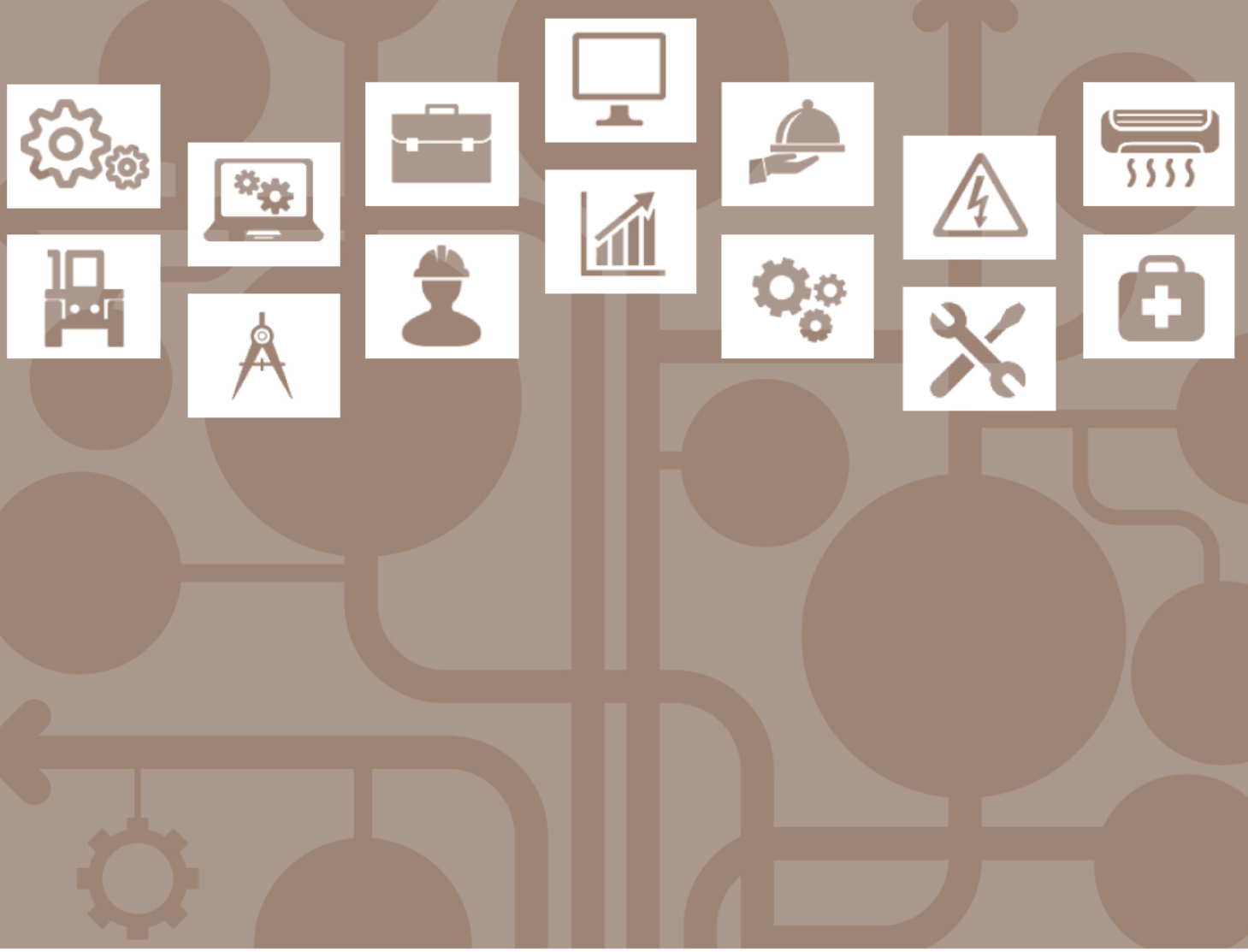
Entry Level Assessment Blueprint

Industrial Electricity



Test Code: 2050 / Version: 01

Specific Competencies and Skills Tested in this Assessment:

DC Theory

- Demonstrate knowledge of principles of DC theory
- Apply Ohm's Law and Kirchoff's Law
- Solve series and parallel circuits
- Calculate power formulas

AC Theory

- Calculate inductive reactance
- Calculate capacitive reactance
- Demonstrate knowledge of principles of AC theory
- Calculate waveforms and frequency

Test Equipment

- Test circuits for opens and continuity
- Test circuits for voltage, current, and resistance
- Demonstrate proper care and use of test equipment

Electrical Drawings

- Identify electrical symbols
- Interpret electrical wiring drawings
- Troubleshoot from electrical drawings

General Wiring

- Select, measure, and cut conduit
- Ream, thread, and bend conduit
- Install boxes, fixtures, and hardware
- Select proper enclosures
- Identify and use electrical fittings

Specific Competencies and Skills continued:

National Electrical Code

- Define the purpose, intent, and jurisdiction of the NEC
- Identify proper conductor type and size
- Size pull boxes
- Demonstrate proper grounding and bonding procedures

Electrical Controls

- Identify and connect switches, sensors, and relays
- Exhibit understanding of motor starters
- Understand principles of circuit protection

Generators

- Determine the output of a generator
- Identify the internal components of a generator

Motors

- Identify motor circuits
- Identify and define types of motors
- Identify and explain motor components
- Connect leads for operation
- Test for operation
- Troubleshoot and diagnose problems

Transformers

- Identify types of transformers
- Identify leads and connections
- Calculate voltage
- Calculate amperage
- Calculate KVA capacity

Variable Frequency Drives (VFDs)

- Demonstrate proper set up and installation
- Exhibit knowledge of basic programming
- Troubleshoot VFDs

Specific Competencies and Skills continued:

Programmable Logic Controllers (PLCs)

- Demonstrate proper set-up and installation
- Exhibit knowledge of basic programming
- Troubleshoot PLCs

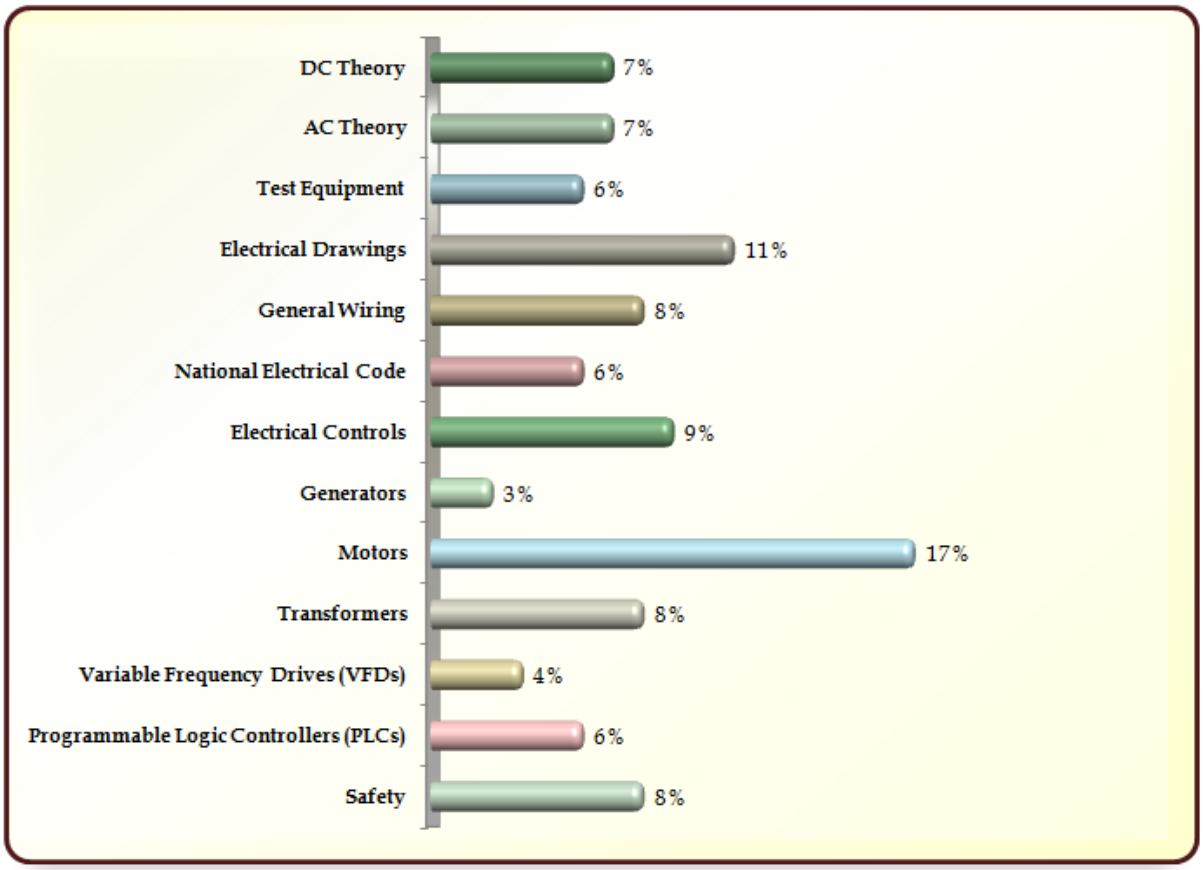
Safety

- Exhibit basic knowledge of OSHA standards
- Identify appropriate personal protective equipment (PPE)
- Demonstrate knowledge of correct scaffolding and ladder procedures
- Demonstrate proper selection and use of hand and power tools

Written Assessment:

Administration Time: 3 hours
Number of Questions: 191

Areas Covered:



Sample Questions:

Materials with a low resistance are called

A. insulators
B. potential
C. emf
D. conductors

Conductors at the junctions of switchpoints or outlets must have a minimum length of

A. 3 inches
B. 6 inches
C. 9 inches
D. 12 inches

Shaded-pole motors have _____ starting torque.

A. very high
B. very low
C. medium
D. maximum

The primary winding of a transformer is rated at 480V and 600 turns. If the secondary is rated at 120Vs, the secondary has _____ turns.

A. 150
B. 400
C. 1600
D. 2400

A _____ is a device used to safely remove cartridge fuses from electrical enclosures.

A. insulated side cutter
B. pulling pliers
C. insulated cartridge pliers
D. fuse puller

Performance Assessment:

Administration Time: 3 hours and 20 minutes
Number of Jobs: 4

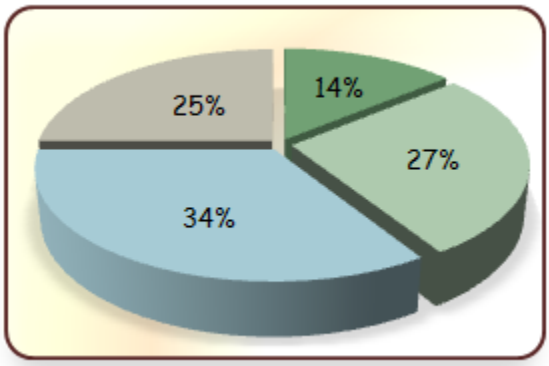
Areas Covered:

14% **Tools and Materials Identification**
Tool and material identification, legibility and neatness, and time to complete Job 1.

27% **Conduit Bending**
Safety, use of tools, reaming and threading, length accuracy, overall appearance of conduit, clean-up work area, and time to complete Job 2.

34% **Wiring a Motor Starter**
Safety, use of tools, selection of conductors, wiring diagram, workmanship, operation of motor, clean-up of work area, and time to complete Job 3.

25% **Replacing Ballast in a Fluorescent Fixture**
Safety, use of tools, installation of ballast, work professionalism, operations of fluorescent fixture, and time to complete Job 4.



Sample Job: Replacing Ballast in a Fluorescent Fixture

Maximum Time: 20 minutes

Participant Activity: The participants will go to a designated station, remove and replace the ballast in the fluorescent fixture that is provided, test for operation, and notify the evaluator so that the work can be inspected.