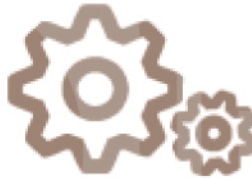


Experienced Worker Assessment Blueprint

Electronics Technology



Specific Competencies and Skills Tested in this Assessment:

Safety Practices

- Identify safety hazards in lab
- Identify basic emergency first-aid techniques
- Report shop, environmental and equipment safety violations
- Identify location of emergency shutdown switch
- Participate in shop safety discussions
- Identify fire extinguisher type and location

Hand Tools

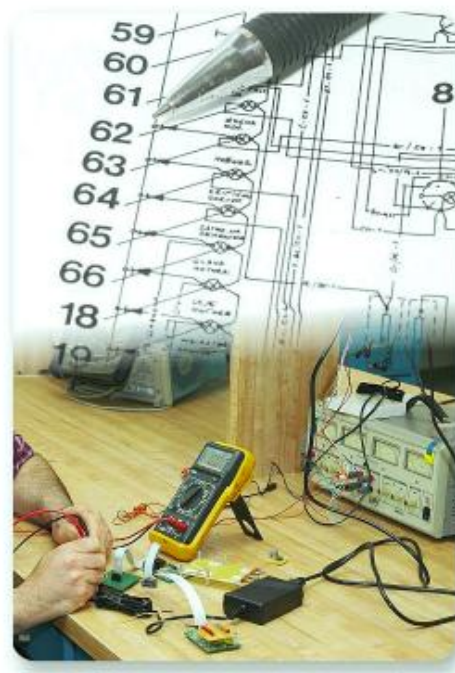
- Identify hand tools
- Select proper hand tool
- Demonstrate hand tool use
- Digital multimeters
- Oscilloscopes
- Power supplies
- Function generator
- Capacitor tester
- Transistor tester

Alternate Current (AC) Circuit Analysis

- Identify alternate current (AC) safety precautions
- Identify alternate current (AC) symbols
- Apply alternate current (AC) circuits
- Apply magnetic fundamentals
- Demonstrate knowledge of inductance
- Demonstrate knowledge of capacitance
- Explain current and voltage phase relationships
- Demonstrate understanding of Ohm's Law
- Analyze waveforms

Communications

- Analyze and troubleshoot communications circuits
- Analyze and troubleshoot antenna systems
- Analyze and troubleshoot transmission lines
- Identify modes of transmission
- Receiver circuit analysis
- RF amp circuit analysis



Specific Competencies and Skills continued:

Direct Current (DC) Circuit Analysis

- Identify direct current (DC) safety precautions
- Identify sources of electricity
- Identify conductors
- Identify resistors
- Identify insulators
- Read diagrams
- Apply Ohm's Law
- Measure voltage
- Measure current
- Measure resistance
- Measure oscilloscope operations
- Analyze series circuits
- Analyze complex circuits
- Troubleshoot direct current (DC) circuits
- Interpret color codes
- Calculate power in a circuit



Solid State Device Analysis

- Analyze simple bipolar transistor amplifiers
- Troubleshoot simple bipolar transistor amplifiers
- Analyze simple field effect transistor (FET) amplifiers
- Troubleshoot thyristor circuits
- Analyze integrated circuit (IC) operational amplifier circuits
- Troubleshoot integrated circuits (IC) op amp circuits
- Analyze optoelectronic circuits
- Use a reference manual
- Physical transistor theory

Basic Logic Function Analysis

- Identify logic symbols
- Analyze the AND function
- Analyze the OR function
- Analyze the NOT function
- Test using logic probe

Specific Competencies and Skills continued:

Electronic Device Applications

- Identify diode applications
- Identify transistor applications
- Identify silicon-controlled rectifier applications
- Identify TRIAC applications
- Troubleshoot electronic circuits
- Identify tubes and applications

Analog Circuit Analysis

- Analyze single-stage amplifiers
- Troubleshoot single-state amplifiers
- Analyze multi-stage amplifiers
- Troubleshoot multi-stage amplifiers
- Analyze differential amplifiers
- Troubleshoot operational amplifiers
- Analyze active filters
- Analyze oscillators
- Troubleshoot oscillators
- Analyze basic pulse circuits
- Troubleshoot basic pulse circuits

Digital Electronic Circuit Analysis

- Troubleshoot basic integrated circuits (IC) logic gates
- Analyze and troubleshoot encoders
- Analyze and troubleshoot decoders
- Analyze flip-flop circuits
- Troubleshoot sequential circuits
- Analyze counters
- Analyze and troubleshoot analog-to-digital converters
- Analyze and troubleshoot digital-to-analog converters
- Examine and identify basic microprocessor operations
- Verify Boolean algebra expression using logic gates
- Analyze arithmetic circuits



Specific Competencies and Skills continued:

Fabrication, Inspection, and Soldering

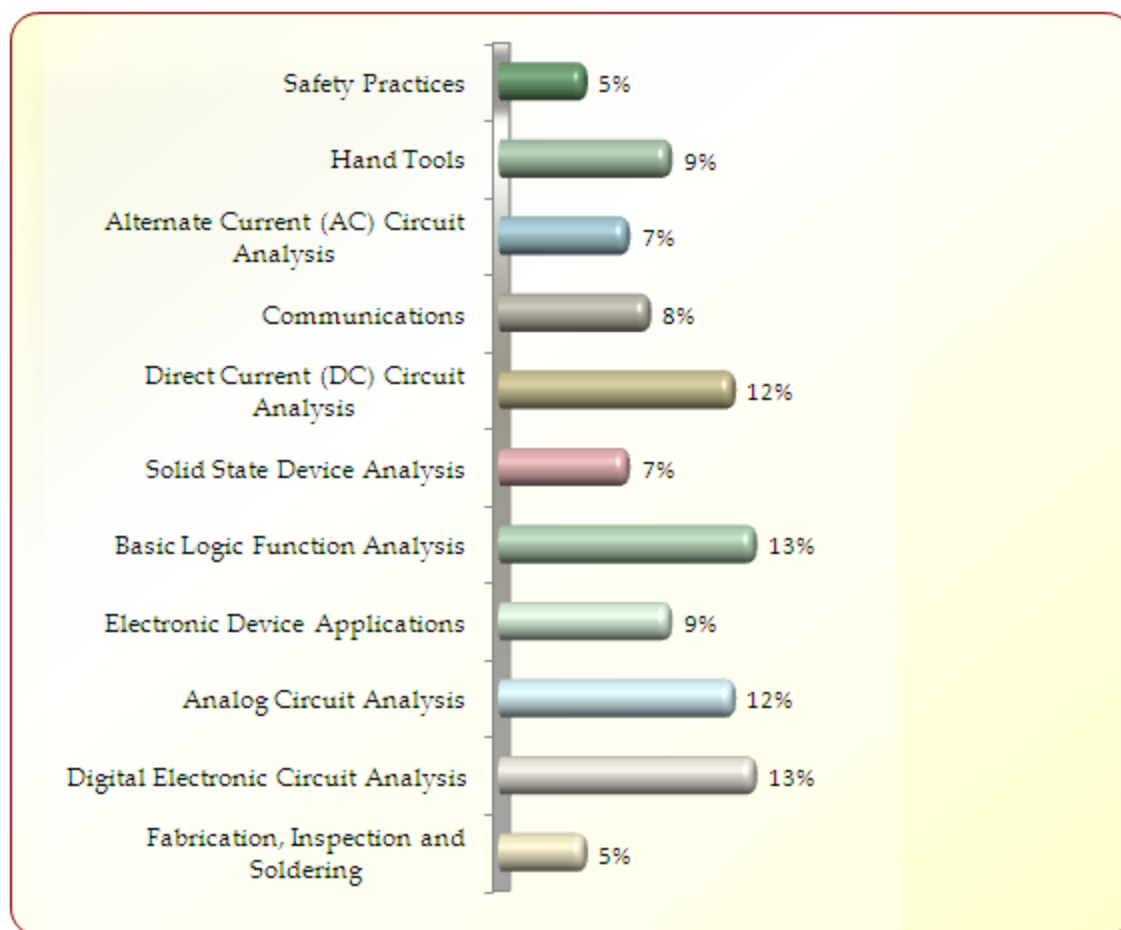
- Construct electrical circuits using mechanical drawings and schematics
- Use proper soldering techniques
- Demonstrate proper fabrication methods
- Identify and use proper tools
- Inspect for faulty wiring
- Inspect for proper tools
- Inspect for proper components
- Inspect for improper lead dress



Written Assessment:

Administration Time: 3 hours

Number of Questions: 192

Areas Covered:

Sample Questions:

What type fire extinguisher is recommended for electrical/electronic equipment?

- A. foam
- B. water
- C. carbon dioxide
- D. powder

What logic gate is called the "universal gate," because of its ability to function as any other logic gate?

- A. AND
- B. NAND
- C. XOR
- D. XNOR

When an input to logic circuit changes, there always is a small amount of time before the output changes. This delay is called

- A. propagation
- B. logic recognition
- C. stabilization
- D. delay factor

The ability of an operation amplifier to reject like signals at its positive and negative input terminals is called its

- A. common mode gain
- B. differential gain
- C. common mode rejection ratio
- D. slew rate

A logic _____ can check the logic levels of all the pins on an IC at one time

- A. probe
- B. monitor
- C. VTVM
- D. all of the above

Performance Assessment:

Administration Time: 3 hours

Number of Jobs: 3

Areas Covered:

33% **Power Supply**

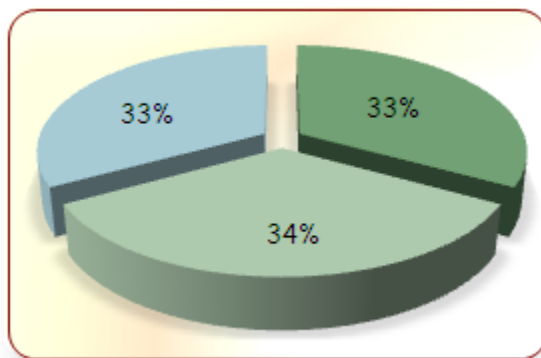
Selection of components, use of tools and equipment, quality of construction, measure secondary voltages, measure voltages for X and Y with DMM and oscilloscope, capacitors installed to X and Y, and voltage measurement for resistor junction to ground with DMM.

34% **Op AMP**

Selection of components, use of tools and equipment, quality of construction, measure output voltage with DMM and display input versus output on oscilloscope.

33% **Digital Circuit Construction and Analysis**

Selection of components, use of tools and equipment, quality of construction, measure frequency and duty cycle, measure changing voltage levels at pins 2/6, determine the divide-by factor, determine duty cycle.



Sample Job: Power Supply

Estimated Job Time: 1 hour

Participant Activity: The participant will select the appropriate components and construct a bridge type rectifier according to the drawing provided in the performance test booklet. Wave forms will be measured and voltages recorded. The participant's circuit must be approved by the evaluator before waveforms are measured and voltages recorded.

