



Job Ready Assessment Blueprint

Electronics



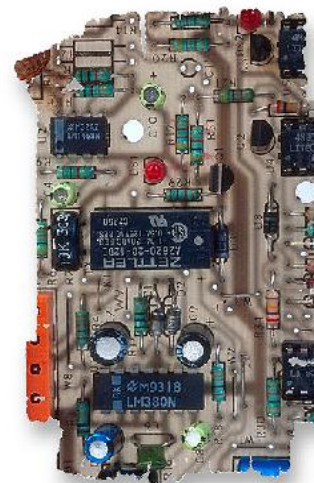
Test Code: 2034 / Version: 01

“Measuring What Matters”

Specific Competencies and Skills Tested in this Assessment:

DC Circuits

- Identify color-coded resistors
- Identify SMT resistor codes
- Identify DC components
- Identify and understand DC circuitry
- Explain voltage and current relationships in series and parallel circuits
- Identify, calculate and connect resistors in series, parallel, and combinational circuits
- Identify and understand DC schematic symbols
- Demonstrate understanding of Ohm's Law (DC circuitry)
- Understand DC power, energy, and sources



AC Circuits

- Identify AC components
- Identify and understand AC circuitry
- Demonstrate understanding of properties of magnetism
- Explain current and voltage phase relationships
- Identify and understand AC schematic symbols
- Demonstrate understanding of Ohm's Law (AC circuitry)
- Analyze waveforms
- Understand AC power and energy
- Identify AC energy sources



Solid State Circuits

- Identify and understand solid state symbols
- Identify and understand diode types and circuits
- Demonstrate understand of transistor operations (NPN-BJT and PNP-BJT)
- Identify and understand the functions of regulator circuits
- Identify and understand the functions of amplifier circuits
- Identify and understand the functions of oscillator circuits
- Identify and understand the functions of SCR circuits

Specific Competencies and Skills continued:

- Identify and understand the functions of thyristor circuits (Triac and Diac)

Soldering and De-Soldering

- Soldering and de-soldering equipment
- Demonstrate understanding of MSDS (Material Safety Data Sheets) relating to soldering and de-soldering
- Exhibit understanding of ESD protection (electrostatic discharge)
- Exhibit understanding of PPEs (personal protective equipment)
- Demonstrate through-hole and SMT soldering techniques



Use of Equipment

- Demonstrate the care and use of hand tools
- Demonstrate the care and use of multimeters (transistor, capacitance, and frequency)
- Demonstrate the care and use of oscilloscopes
- Demonstrate the care and use of power supplies
- Demonstrate the care and use of isolation transformers and variacs
- Demonstrate the care and use of function generator
- Demonstrate the care and use of logic probes

Digital Theory

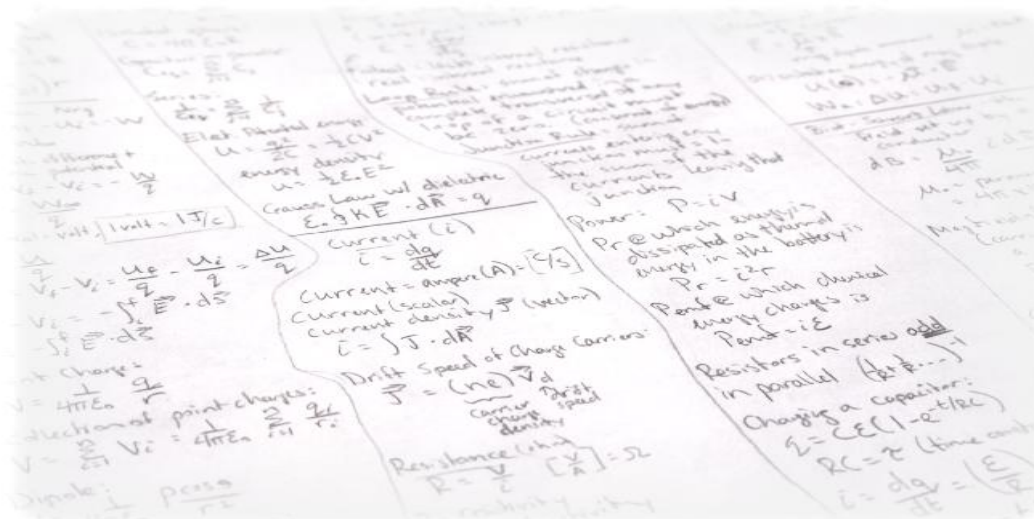
- Use of a reference manual
- Identify and understand digital symbols
- Understand digital logic (gates, counters, and flip-flops)
- Recognize sequential and combinational digital circuits

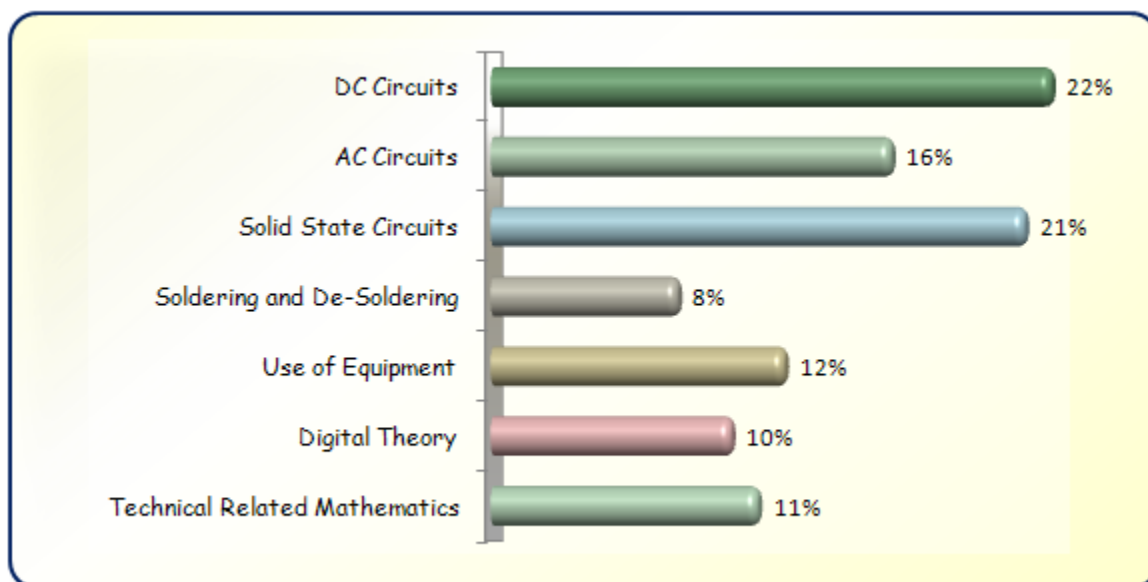


Specific Competencies and Skills continued:

Technical Related Mathematics

- Demonstrate knowledge of basic Boolean algebra
- Identify and understand gates and truth tables
- Demonstrate understanding of percentages and fractions
- Identify and understand basic geometry
- Demonstrate understanding of algebra and basic trigonometry
- Perform conversions of number systems and unit measurements



Written Assessment:**Administration Time:** 3 hours**Number of Questions:** 176**Areas Covered:**

Sample Questions:

If a resistor's colors are yellow, red, black, and silver, the resistance and tolerance are

- A. 42 ohms, 10 percent
- B. 240 ohms, 10 percent
- C. 420 ohms, 5 percent
- D. 420 ohms, 10 percent

The two parallel lines that are between the coil symbols on a transformer represent the

- A. air core
- B. magnet
- C. voltage
- D. iron core

To remove excess solder from the soldering pencil,

- A. tap the soldering pencil on the table
- B. rub the solder off with your hand
- C. wipe the solder off on your shirt
- D. wipe the solder off on a wet sponge

The inverter gate has a

- A. Logic 0 output with a Logic 0 input
- B. Logic 0 output with a Logic 1 input
- C. Logic 1 output with Logic 1 input
- D. Logic 1 output with undefined input

If the input to a transistor amplifier is 20 mV and the output is 5 volts, the amplifier gain is

- A. 25
- B. 50
- C. 250
- D. 500



Performance Assessment:

Administration Time: 3 hours and 10 minutes

Number of Jobs: 5

Areas Covered:

12% IC Identification

Use of reference source, digital functions identification, and timeliness of job.

26% DC Circuit Construction and Analysis

Component selection, construction of protoboards, calculations, measurements, work area clean up, and timeliness of job.

21% Power Supply Construction and Analysis

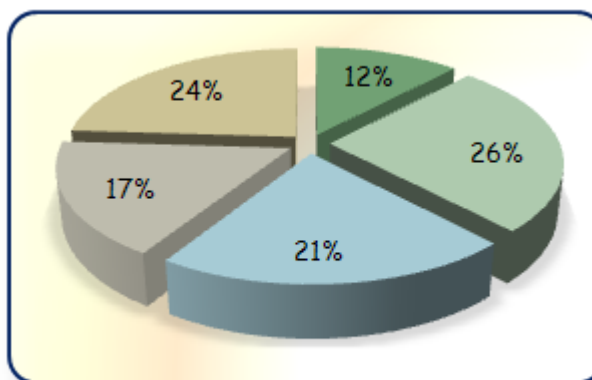
Construction of power supply, measurement, calculation, work area clean up, and timeliness of job.

17% De-Soldering and Soldering

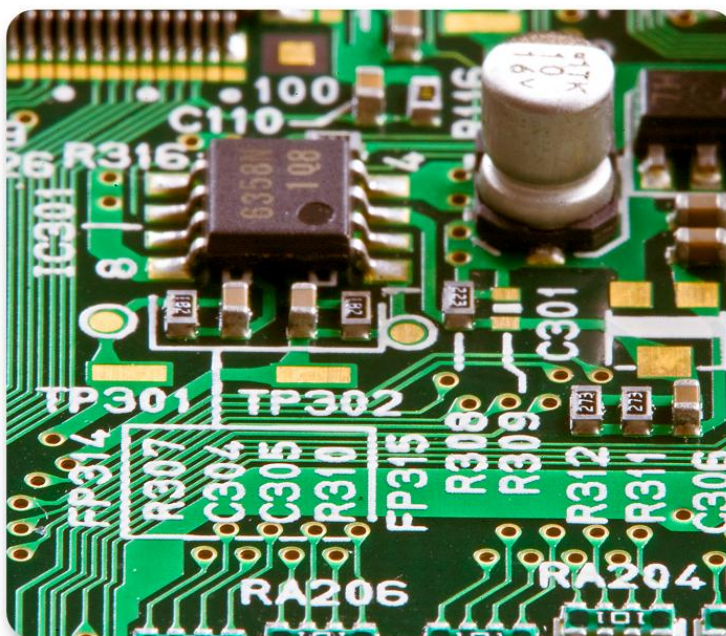
De-soldering, soldering, component identification, work area clean up, and timeliness of job.

24% CE Amplifier Construction and Analysis

Construction of CE amplifier, calculations, measurement of voltage, work area clean up, and timeliness of job.



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|------------------------------|---|
| Sample Job: | IC Identification |
| Maximum Time: | 10 minutes |
| Participant Activity: | The participant will go to the designated station and use the manual that is provided to identify integrated circuits provided. |



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!

