

PART SIX

Partial List of CEMA Skills

PARTIAL SKILLS LIST

EIA CONSUMER ELECTRONICS MANUFACTURER'S ASSOCIATION (CEMA)

BEHAVIOR SKILLS AND WORK HABITS

- Implement responsibilities of job position including exhibiting dependability and meeting organizationally defined expectations.
- Follow rules, regulations, and policies as established, including interpreting employer/employee handbook and procedures.
- Understand and practice cost effectiveness.
- Practice time management and follow work schedule.
- Assume responsibility for own decisions and actions.
- Exhibit pride.
- Display initiative in undertaking new tasks.
- Show assertiveness appropriate to the situation.
- Seek work challenges.
- Understand and apply ethical principles to decision making.
- Comply with company standards including dress, personal hygiene, and cleanliness.
- Understand the importance of providing good customer service (internal and external).
- Respond constructively to suggestions for improvement.
- Provide praise and suggestions for improvement.
- Channel/control emotional reactions constructively.
- Recognize problems and work toward their solution.
- Exhibit positive behavior.
- Exhibit sensitivity to internal and external customer needs.
- Treat people with respect.
- Recognize nonverbal communication.
- Understand interactive relationships required for effective teamwork.
- Understand team's operating procedures.
- Adapt as necessary to complete the team task.
- Evaluate outcome

GENERAL

- Demonstrate an understanding of proper safety techniques for all types of circuits.
- Demonstrate an understanding of and comply with relevant OSHA safety standards.
- Demonstrate an understanding of proper troubleshooting techniques.
- Demonstrate an understanding of basic assembly skills using hand and power tools.
- Demonstrate an understanding of acceptable soldering/desoldering techniques.
- Demonstrate an understanding of proper solderless connections.
- Demonstrate an understanding of use of data books and cross references/technical manuals and requisition of electronic components.
- Demonstrate an understanding of the interpretation and creation of electronic schematics, drawings, and flow diagrams.

- Demonstrate an understanding of design curves, tables, graphs, and recording of data.
- Demonstrate an understanding of color codes and other component descriptors.
- Demonstrate an understanding of site electrical and environmental survey.
- Demonstrate the use of listening skills or assistive devices to assess signs and symptoms.

DC CIRCUITS

- Demonstrate an understanding of sources of electricity in dc circuits.
- Demonstrate an understanding of principles and operation of batteries.
- Demonstrate an understanding of the meaning of and relationships among and between voltage, current, resistance, and power in dc circuits.
- Demonstrate an understanding of measurement of resistance of conductors and insulators.
- Demonstrate an understanding of application of Ohm's law to series, parallel, and series-parallel circuits.
- Demonstrate an understanding of magnetic properties of circuits and devices.
- Demonstrate an understanding of the physical, electrical characteristics of capacitors and inductors.
- Understand principles and operations of dc series circuits.
- Fabricate and demonstrate dc series circuits.
- Troubleshoot and repair dc series circuits.
- Understand principles and operations of dc parallel circuits.
- Fabricate and demonstrate dc parallel circuits.
- Troubleshoot and repair dc parallel circuits.
- Understand the principles and operations of dc series-parallel and bridge circuits.
- Fabricate and demonstrate dc series-parallel and bridge circuits.
- Troubleshoot and repair dc series-parallel and bridge circuits.
- Understand principles and operations of the Wheatstone bridge.
- Understand principles and operations of dc voltage divider circuits (loaded and unloaded).
- Fabricate and demonstrate dc voltage divider circuits (loaded and unloaded).
- Troubleshoot and repair dc voltage divider circuits (loaded and unloaded).
- Understand principles and operations of dc RC and RL circuits.
- Fabricate and demonstrate dc RC and RL circuits.
- Troubleshoot and repair dc RC and RL circuits.
- Demonstrate an understanding of measurement of power in dc circuits.

AC CIRCUITS

- Demonstrate an understanding of sources of electricity in ac circuits.
- Demonstrate an understanding of the properties of an ac signal.
- Demonstrate an understanding of the principles of operation and characteristics of sinusoidal and nonsinusoidal waveforms.
- Demonstrate an understanding of basic motor/generator theory and operation.
- Demonstrate an understanding of measurement of power in ac circuits.
- Demonstrate an understanding of the principle of operation of various power conditioning devices (transformers, surge suppressers, uninterruptable power systems).
- Demonstrate an understanding of the principle and operation of safety grounding systems (arresters, ground fault interrupters, etc.).
- Understand principles and operation of ac capacitive circuits.
- Fabricate and demonstrate ac capacitive circuits.

- Troubleshoot and repair ac capacitive circuits.
- Understand principles and operation of ac inductive circuits.
- Fabricate and demonstrate ac inductive circuits.
- Troubleshoot and repair ac inductive circuits.
- Understand principles and operations of ac circuits using transformers.
- Demonstrate an understanding of impedance matching theory.
- Fabricate and demonstrate ac circuits using transformers.
- Troubleshoot and repair ac circuits using transformers.
- Understand principles and operations of ac differentiator and integrator circuits (determine RC and RL time constants).
- Fabricate and demonstrate ac differentiator and integrator circuits.
- Troubleshoot and repair ac differentiator and integrator circuits.
- Understand principles and operations of ac series and parallel resonant circuits.
- Fabricate and demonstrate ac series and parallel resonant circuits.
- Troubleshoot and repair ac series and parallel resonant circuits.
- Understand principles and operations of ac RC , RL and RLC circuits.
- Fabricate and demonstrate ac RC , RL , and RLC circuits.
- Troubleshoot and repair ac RC , RL , and RLC circuits.
- Understand principles and operations of ac frequency selective filter circuits.
- Fabricate and demonstrate ac frequency selective filter circuits.
- Troubleshoot and repair ac frequency selective filter circuits.

DISCREET SOLID STATE

- Demonstrate an understanding of the properties of semiconductor materials.
- Demonstrate an understanding of pn junctions.
- Demonstrate an understanding of bipolar junction transistors.
- Demonstrate an understanding of field effect transistors (FETs/MOSFETs).
- Demonstrate and understanding of special diodes and transistors.
- Understand principles and operations of diode circuits.
- Fabricate and demonstrate diode circuits.
- Troubleshoot and repair diode circuits.
- Understand principles and operations of optoelectronic circuits.
- Fabricate and demonstrate optoelectronic circuits.
- Troubleshoot and repair optoelectronic circuits.
- Understand principles and operations of single stage amplifiers.
- Fabricate and demonstrate single stage amplifiers.
- Troubleshoot and repair single stage amplifiers.
- Understand principles and operations of thyristor circuits (SCR, TRIAC, DIAC, etc.).
- Fabricate and demonstrate thyristor circuits (SCR, TRIAC, DIAC, etc.).
- Troubleshoot and repair thyristor circuits (SCR, TRIAC, DIAC, etc.).

ANALOG CIRCUITS

- Understand principles and operations of multistage amplifiers.
- Fabricate and demonstrate multistage amplifiers.
- Troubleshoot and repair multistage amplifiers.
- Understand principles and operations of linear power supplies and filters.
- Fabricate and demonstrate linear power supplies and filters.

- Troubleshoot and repair linear power supplies and filters.
- Understand principles and operations of operational amplifier circuits.
- Fabricate and demonstrate operational amplifier circuits.
- Troubleshoot and repair operational amplifier circuits.
- Understand principles and operations of audio power amplifiers.
- Fabricate and demonstrate audio power amplifiers.
- Troubleshoot and repair audio power amplifiers.
- Understand principles and operations of active filter circuits.
- Fabricate and demonstrate active filter circuits.
- Troubleshoot and repair active filter circuits.
- Understand principles and operations of sinusoidal and nonsinusoidal oscillator circuits.
- Fabricate and demonstrate sinusoidal and nonsinusoidal oscillator circuits.
- Troubleshoot and repair sinusoidal and nonsinusoidal oscillator circuits.

BASIC AND PRACTICAL SKILLS PART 1

- Read and apply various sources of technical information.
- Determine if a solution is reasonable.
- Demonstrate ability to use a simple electronic calculator.
- Round and/or truncate numbers to designated place value.
- Compare order and determine equivalencies of real numbers (e.g. fractions, decimals, percentages).
- Solve problems and make applications involving integers, fractions, decimals, percentages.
- Translate written and/or verbal statements into mathematical expressions.
- Convert, compare, and compute with common units of measurement within and across measurement systems.
- Read scales on measurement devices and make interpolations where appropriate.
- Collect and organize data into tables, charts, and/or graphs.
- Identify patterns, note trends, and/or draw conclusions from tables, charts, maps, and/or graphs.
- Compute and interpret mean, median, and/or mode.
- Simplify and solve algebraic expressions and formulas.
- Select and use formulas properly.
- Understand and use scientific notation.
- Use properties of exponents and logarithms.
- Determine slope, midpoint, and distance.
- Graph functions.
- Recognize, classify, and use properties of lines and angles.
- Apply Pythagorean theorem.
- Identify basic functions of sine, cosine, and tangent.
- Compute and solve problems using basic trigonometric functions.
- Understand principles of electricity including its relationship to the nature of matter.

BASIC AND PRACTICAL SKILLS PART 2

- Demonstrate basic keyboard skills.
- Maintain state-of-the art skills through participation in in-service or other training.
- Participate in continuing education.
- Understand and apply continuous improvement principles.
- Demonstrate knowledge of the business products/services.

- Use effective written and other communication skills.
- Use telephone etiquette including relaying messages accurately.
- Employ appropriate skills for gathering and relating information.
- Interpret written, graphic, and oral instructions.
- Interact with co-workers and customers in a logical, clear, and understandable manner.
- Use language appropriate to the situation.
- Participate in meetings in a positive and constructive manner.
- Use job-relating terminology.
- Write technical reports, letters, and memoranda as appropriate to the audience.
- Document work projects, procedures, test, and equipment failures.
- Identify the problem.
- Clarify purposes and goals.
- Identify available solutions and their impact, including evaluating credibility of information.
- Evaluate options.
- Set priorities.
- Select/implement options/decisions including predicting results of proposed action.
- Organize personal workloads.
- Participate in brainstorming sessions to generate new ideas and solve problems.

