

# ELECTRICAL/ELECTRONIC SYSTEM SPECIALIST PROFILE OF TRAINING MASTERY

Instructor \_\_\_\_\_

Date \_\_\_\_\_

Program _____	
Grade _____	School _____
Name _____	Soc. Sec. No. _____
Address _____	Phone _____
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Address _____	Phone _____
Allergies/Disabilities that might require special accommodation for training (please specify) _____	
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Date of Enrollment \_\_\_\_ - \_\_\_\_ - \_\_\_\_ Total Class Hours \_\_\_\_\_ Total Hours Absent \_\_\_\_\_  
Date of Withdrawal \_\_\_\_ - \_\_\_\_ - \_\_\_\_ Total On-the-Job Training Hours \_\_\_\_\_ Total Hours Tardy \_\_\_\_\_  
Date of Completion \_\_\_\_ - \_\_\_\_ - \_\_\_\_ Total Lab Hours \_\_\_\_\_

## ON-THE-JOB TRAINING/WORK EXPERIENCE

_____	_____	_____
Duration of Employment	Job Title	Supervisor's Name
_____		_____
Address of Employer	Phone	
_____	_____	_____
Duration of Employment	Job Title	Supervisor's Name
_____		_____
Address of Employer	Phone	

### Use of This Document

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# SPECIFIC JOB COMPETENCIES

Instructor: As each competency is mastered, place your initials and the date in the blank on the left. This will verify that the student can perform the skill with a minimum of supervision.

Date/Initials

## 1. UNDERSTANDING BASIC ELECTRICAL PRINCIPLES

### MODULE 1A — Basic Principles and Theories

- \_\_\_\_\_ 1. Match terms relating to the composition of matter to their definitions.
- \_\_\_\_\_ 2. Identify true statements about atoms by selecting the true one from a pair of similar statements.
- \_\_\_\_\_ 3. Identify true statements about the electrical charges in atoms by selecting them from a list.
- \_\_\_\_\_ 4. Match terms relating to electron flow to their definitions.
- \_\_\_\_\_ 5. State what direction current flows in relation to its electromotive force.
- \_\_\_\_\_ 6. Match the terms conductor, insulator, and semiconductor to their definitions.

### MODULE 1B — Measurement

- \_\_\_\_\_ 7. Describe current.
- \_\_\_\_\_ 8. Name the two factors that determine the amount of current flowing through a conductor.
- \_\_\_\_\_ 9. Match the two types of current to their definitions.
- \_\_\_\_\_ 10. Match the two types of current with the voltage sources in a vehicle that initiate them.
- \_\_\_\_\_ 11. Describe voltage.
- \_\_\_\_\_ 12. List two sources of voltage for automotive electrical systems.
- \_\_\_\_\_ 13. Describe resistance.
- \_\_\_\_\_ 14. List five factors that influence resistance as current moves through a circuit.
- \_\_\_\_\_ 15. List two results of resistance as current moves through a conductor.
- \_\_\_\_\_ 16. Write the definition of the term voltage drop.

### MODULE 1C — Ohm's Law and Power

- \_\_\_\_\_ 17. State Ohm's law.
- \_\_\_\_\_ 18. Write the formulas for calculating the current, voltage, and resistance in a conductor.
- \_\_\_\_\_ 19. Calculate current using Ohm's law. (Assignment Sheet 1)
- \_\_\_\_\_ 20. Calculate voltage using Ohm's law. (Assignment Sheet 2)
- \_\_\_\_\_ 21. Calculate resistance using Ohm's law. (Assignment Sheet 3)
- \_\_\_\_\_ 22. Predict changes in voltage, current, and resistance in a circuit. (Assignment Sheet 4)
- \_\_\_\_\_ 23. Describe power.
- \_\_\_\_\_ 24. List two ways electrical devices can be rated.
- \_\_\_\_\_ 25. List two common automotive electrical devices that are rated in watts.

### MODULE 1D — Magnetism and Electromagnets

- \_\_\_\_\_ 26. Match three kinds of magnets with their definitions.
- \_\_\_\_\_ 27. Identify true statements about magnets by selecting the true one from a pair of similar statements.
- \_\_\_\_\_ 28. Match terms relating to magnetism and electromagnets to their definitions.
- \_\_\_\_\_ 29. List four properties of electromagnets that make them useful in automotive electrical systems.
- \_\_\_\_\_ 30. List three automotive electrical components that use electromagnetism.

## 2. UNDERSTANDING CIRCUITS AND CIRCUIT DEVICES

### MODULE 2A — Circuits

- \_\_\_\_\_ 1. Label the six circuit elements on an illustration of a basic automotive circuit.
- \_\_\_\_\_ 2. Match the names of the six circuit elements found on a basic automotive circuit with descriptions of their functions in a circuit.
- \_\_\_\_\_ 3. Distinguish among three types of commonly used circuits.

### MODULE 2B — Power Sources and Grounds

- \_\_\_\_\_ 4. List the two power sources for automotive electrical circuits.
- \_\_\_\_\_ 5. State why and where automotive circuits are grounded.
- \_\_\_\_\_ 6. Draw wiring diagram symbols that indicate a battery and a ground.

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## MODULE 2C — Control Devices

- \_\_\_\_\_ 7. Distinguish among common control devices by their illustrations, wiring diagram symbols, current factor controlled, and type of control each has on voltage or resistance in a circuit.
- \_\_\_\_\_ 8. Explain what the color bands found on resistors represent, and use the color bands on a resistor to determine its resistance value. (Assignment Sheet 1)

## MODULE 2D — Protection Devices

- \_\_\_\_\_ 9. Distinguish among common protection devices by their illustrations and wiring diagram symbols.
- \_\_\_\_\_ 10. List the size categories of blade fuses.
- \_\_\_\_\_ 11. Explain how fuses, fusible links, and circuit breakers protect the circuits on which they are installed.
- \_\_\_\_\_ 12. Determine correct replacement fuses. (Assignment Sheet 2)

## MODULE 2E — Loads

- \_\_\_\_\_ 13. Distinguish among common loads by their illustrations, wiring diagram symbols, and the form of energy into which each converts current.

## MODULE 2F — Electronics and Electronic Circuit Devices

- \_\_\_\_\_ 14. Describe how a device that is electronic is different from a device that is electric.
- \_\_\_\_\_ 15. Define the terms P-type semiconductors and N-type semiconductors.
- \_\_\_\_\_ 16. List at least five advantages and disadvantages of using electronic devices in circuits.
- \_\_\_\_\_ 17. Distinguish among common electronic circuit devices by their illustrations, wiring diagram symbols, and functions in a circuit.

## MODULE 2G — Conductors

- \_\_\_\_\_ 18. Distinguish among common conductors by their illustrations and wiring diagram symbols.
- \_\_\_\_\_ 19. Name four types of material that are commonly used as insulators in automotive electrical systems.
- \_\_\_\_\_ 20. Explain the purpose of a wire shield.
- \_\_\_\_\_ 21. List three purposes of wiring hardware, and match the names of wiring hardware to illustrations of the hardware.

## MODULE 2H — Wiring Diagrams

- \_\_\_\_\_ 22. Match the names of common circuit features to the wiring diagram symbols that represent the features.
- \_\_\_\_\_ 23. Use wire color and circuit identification codes to locate circuit information. (Assignment Sheet 3)
- \_\_\_\_\_ 24. Use wiring diagrams to locate information about circuits. (Assignment Sheet 4)
- \_\_\_\_\_ 25. Use your knowledge of electric/electronic theory and circuit devices to predict changes in current, voltage, and resistance in a series circuit. (Assignment Sheet 5)

## 3. DEVELOPING BASIC DIAGNOSIS AND REPAIR SKILLS

### MODULE 3A — Common Circuits

- \_\_\_\_\_ 1. Match types of common circuits to their electrical characteristics.
- \_\_\_\_\_ 2. Identify types of circuits and circuit devices on a circuit. (Assignment Sheet 1)
- \_\_\_\_\_ 3. Perform calculations using units of electrical measurement. (Assignment Sheet 2)
- \_\_\_\_\_ 4. Prepare to measure current, voltage, and resistance with a multimeter. (Assignment Sheet 3)
- \_\_\_\_\_ 5. Calculate resistance in sample circuits. (Assignment Sheet 4)
- \_\_\_\_\_ 6. Calculate current in sample circuits. (Assignment Sheet 5)
- \_\_\_\_\_ 7. Calculate voltage drop in sample circuits. (Assignment Sheet 6)
- \_\_\_\_\_ 8. Calculate voltage in sample circuits. (Assignment Sheet 7)

**Student ratings on specific competencies evaluated during the course are available upon student's written request and/or by calling the instructor. Parent's or guardian's signature is necessary if student is under 18 years of age.**

Date/Initials

**MODULE 3B — Common Problems and Diagnostic Instruments**

- \_\_\_\_\_ 9. Describe common problems with electrical circuits (types, symptoms, causes).
- \_\_\_\_\_ 10. Distinguish among types of electrical diagnostic instruments (names and illustrations, usage, calibrated vs. tested requirement).
- \_\_\_\_\_ 11. Calibrate and make functionality tests on electrical diagnostic instruments. (Job Sheet 1)

**MODULE 3C — Diagnostic Skills and Basic Repair Procedures**

- \_\_\_\_\_ 12. Arrange the steps in electrical troubleshooting in the order they should be completed.
- \_\_\_\_\_ 13. Check electrical/electronic circuits with jumper wires. (Job Sheet 2)
- \_\_\_\_\_ 14. Check electrical circuits with a test light. (Job Sheet 3)
- \_\_\_\_\_ 15. Check voltage in electrical/electronic circuits with a multimeter. (Job Sheet 4)
- \_\_\_\_\_ 16. Check voltage drops in electrical/electronic circuits with a multimeter. (Job Sheet 5)
- \_\_\_\_\_ 17. Check current flow in electrical/electronic circuits and components with a multimeter. (Job Sheet 6)
- \_\_\_\_\_ 18. Check continuity and resistances in electrical/electronic circuits and components with a multimeter. (Job Sheet 7)
- \_\_\_\_\_ 19. Find shorts, grounds, opens, and high resistance problems in electrical/electronic circuits. (Job Sheet 8)
- \_\_\_\_\_ 20. Inspect, test and replace switches, connectors, and wires of electrical/electronic circuits. (Job Sheet 9)
- \_\_\_\_\_ 21. Inspect, test, and replace fusible links, circuit breakers, and fuses. (Job Sheet 10)

**4. UNDERSTANDING AUTOMOTIVE COMPUTER CONTROLS**

**MODULE 4A — Computer Components**

- \_\_\_\_\_ 1. Describe the functions of the basic components of a computer system.
- \_\_\_\_\_ 2. List common automotive computers (microprocessors).
- \_\_\_\_\_ 3. Distinguish among types of sensors.
- \_\_\_\_\_ 4. Distinguish among types of actuators.
- \_\_\_\_\_ 5. Demonstrate how a potentiometer functions as a sensor. (Assignment Sheet)
- \_\_\_\_\_ 6. Use a DVOM to measure reference voltage output from the powertrain control module (PCM). (Job Sheet 1)

**MODULE 4B — Data Communication**

- \_\_\_\_\_ 7. Distinguish between analog and digital signals.
- \_\_\_\_\_ 8. Distinguish between serial data transfer and parallel data transfer.
- \_\_\_\_\_ 9. Trace the flow of data through a simplified computer system.
- \_\_\_\_\_ 10. List ways to retrieve diagnostic information from automotive computers.
- \_\_\_\_\_ 11. Measure voltage, amperage and AC output of the alternator using an oscilloscope. (Job Sheet 2)
- \_\_\_\_\_ 12. Access vehicle fault codes using the vehicle's computerized diagnostic system. (Job Sheet 3)

**5. DIAGNOSING AND SERVICING BATTERIES**

**Module 5A — Understanding Batteries**

- \_\_\_\_\_ 1. List five functions of the battery.
- \_\_\_\_\_ 2. Match types of automotive batteries to their descriptions.
- \_\_\_\_\_ 3. Match ratings of automotive batteries to their descriptions.
- \_\_\_\_\_ 4. List factors affecting correct battery selection.
- \_\_\_\_\_ 5. Evaluate factors in selecting the appropriate battery for a vehicle. (Assignment Sheet)

**Module 5B — Working with Batteries**

- \_\_\_\_\_ 6. List safety rules for working with automotive batteries.
- \_\_\_\_\_ 7. Maintain and restore electronic memory functions. (Job Sheet 1)
- \_\_\_\_\_ 8. Inspect, clean, fill, and replace a battery, battery cables, connectors, clamps, and hold-downs. (Job Sheet 2)
- \_\_\_\_\_ 9. Make a battery state-of-charge test. (Job Sheet 3)
- \_\_\_\_\_ 10. Make a battery capacity (load, high-rate discharge) test. (Job Sheet 4)
- \_\_\_\_\_ 11. Slow and fast charge a battery. (Job Sheet 5)
- \_\_\_\_\_ 12. Jump-start a vehicle with jumper cables and a booster battery or auxiliary power supply. (Job Sheet 6)

**6. DIAGNOSING AND REPAIRING STARTING SYSTEMS**

- \_\_\_\_\_ 1. Describe a starting system's parts and their functions.
- \_\_\_\_\_ 2. Arrange the steps of starting system operation in order.
- \_\_\_\_\_ 3. Describe starting system tests.
- \_\_\_\_\_ 4. Describe how starting system test equipment is hooked up to a vehicle.
- \_\_\_\_\_ 5. Diagnose starting system problems. (Assignment Sheet)
- \_\_\_\_\_ 6. Make a starter current draw test. (Job Sheet 1)
- \_\_\_\_\_ 7. Make starter circuit voltage drop tests. (Job Sheet 2)
- \_\_\_\_\_ 8. Inspect, test, and repair or replace switches, connectors, and wires of starter control circuits. (Job Sheet 3)
- \_\_\_\_\_ 9. Inspect, test, and replace starter relays and solenoids. (Job Sheet 4)
- \_\_\_\_\_ 10. Remove and replace a starter. (Job Sheet 5)

**7. DIAGNOSING AND REPAIRING CHARGING SYSTEMS**

- \_\_\_\_\_ 1. State the purpose of a charging system, a generator (alternator), and charging system output tests.
- \_\_\_\_\_ 2. Label the parts of a charging system indicated on an illustration.
- \_\_\_\_\_ 3. Match the names of charging system tests with descriptions of the conditions evaluated by the tests.
- \_\_\_\_\_ 4. Describe how charging system test equipment is hooked up to the vehicle.
- \_\_\_\_\_ 5. Diagnose charging system problems that cause an undercharge, a no-charge, or an overcharge condition. (Assignment Sheet)
- \_\_\_\_\_ 6. Inspect, adjust, and replace generator (alternator) drive belts, pulleys, and tensioners. (Job Sheet 1)
- \_\_\_\_\_ 7. Make a charging system output test; determine needed repairs. (Job Sheet 2)
- \_\_\_\_\_ 8. Inspect, test, and replace a voltage regulator/regulating circuit; determine needed repairs. (Job Sheet 3)
- \_\_\_\_\_ 9. Make a charging circuit voltage drop test; determine needed repairs. (Job Sheet 4)
- \_\_\_\_\_ 10. Inspect, repair, or replace connectors and wires of charging circuits. (Job Sheet 5)
- \_\_\_\_\_ 11. Remove, inspect, and replace a generator (alternator). (Job Sheet 6)

**8. DIAGNOSING AND REPAIRING LIGHTING SYSTEMS**

**MODULE 8A — Headlight Systems**

- \_\_\_\_\_ 1. Label the parts of a headlights circuit.
- \_\_\_\_\_ 2. Match the names of the parts of a headlights circuit to descriptions of their functions.
- \_\_\_\_\_ 3. Diagnose the cause of headlights problems. (Assignment Sheet 1)
- \_\_\_\_\_ 4. Inspect, replace, and aim headlights/bulbs. (Job Sheet 1)
- \_\_\_\_\_ 5. Inspect, test, repair, and replace the components of a headlight circuit. (Job Sheet 2)
- \_\_\_\_\_ 6. Label the parts of a retractable headlights circuit.
- \_\_\_\_\_ 7. Match the names of the parts of a retractable headlights circuit to descriptions of their functions.
- \_\_\_\_\_ 8. Diagnose the cause of retractable headlights problems. (Assignment Sheet 2)
- \_\_\_\_\_ 9. Inspect, test, repair, and replace the components of a retractable headlight assembly circuit. (Job Sheet 3)

**MODULE 8B — Parking, Taillight, and Stoplight Systems**

- \_\_\_\_\_ 10. Label the parts of a parking lights and taillights circuit.
- \_\_\_\_\_ 11. Match the names of the parts of a parking lights and taillights circuit to descriptions of their functions.
- \_\_\_\_\_ 12. Diagnose the cause of parking lights and taillights problems. (Assignment Sheet 3)
- \_\_\_\_\_ 13. Inspect, test, repair, and replace the components of a parking light and taillight circuit. (Job Sheet 4)
- \_\_\_\_\_ 14. Label the parts of a stoplight (brake light) circuit.
- \_\_\_\_\_ 15. Match the names of the parts of a stoplight (brake light) circuit to descriptions of their functions.
- \_\_\_\_\_ 16. Diagnose the cause of stoplight (brake light) problems. (Assignment Sheet 4)
- \_\_\_\_\_ 17. Inspect, test, adjust, repair, and replace the components of a stoplight (brake light) circuit. (Job Sheet 5)

**MODULE 8C — Turn Signals and Hazard Light Systems**

- \_\_\_\_\_ 18. Label the parts of turn signal and hazard lights circuit.
- \_\_\_\_\_ 19. Match the names of the parts of turn signal and hazard lights circuit to descriptions of their functions.
- \_\_\_\_\_ 20. Diagnose the cause of turn signal and hazard lights problems. (Assignment Sheet 5)

- \_\_\_\_\_ 21. Inspect, test, repair, and replace the components of turn signal and hazard light circuit. (Job Sheet 6)

**MODULE 8D — Backup Lights Systems**

- \_\_\_\_\_ 22. Label the parts of a back-up lights circuit.  
\_\_\_\_\_ 23. Match the names of the parts of a back-up lights circuit to descriptions of their functions.  
\_\_\_\_\_ 24. Diagnose the cause of back-up lights problems. (Assignment Sheet 6)  
\_\_\_\_\_ 25. Inspect, test, repair, and replace the components of a back-up lights circuit. (Job Sheet 7)

**MODULE 8E — Instrument Lights Systems**

- \_\_\_\_\_ 26. Label the parts of an instrument lighting circuit.  
\_\_\_\_\_ 27. Match the names of the parts of an instrument lighting circuit to descriptions of their functions.  
\_\_\_\_\_ 28. Diagnose the cause of an instrument lighting problems. (Assignment Sheet 7)  
\_\_\_\_\_ 29. Inspect, test, repair, and replace the components of an instrument lighting circuit. (Job Sheet 8)

**MODULE 8F — Courtesy Lights Systems**

- \_\_\_\_\_ 30. Label the parts of a courtesy lights circuit.  
\_\_\_\_\_ 31. Match the names of the parts of a courtesy lights circuit to descriptions of their functions.  
\_\_\_\_\_ 32. Diagnose the cause of courtesy lights problems. (Assignment Sheet 8)  
\_\_\_\_\_ 33. Inspect, test, repair, and replace the components of a courtesy lights circuit. (Job Sheet 9)

**9. DIAGNOSING AND REPAIRING DRIVER INFORMATION SYSTEMS**

**MODULE 9A — Gauges**

- \_\_\_\_\_ 1. Match the basic categories of gauges to descriptions of their operation.  
\_\_\_\_\_ 2. Distinguish among types of gauges by their illustrations and descriptions of their operation.  
\_\_\_\_\_ 3. Distinguish among types of gauge sending units by their illustrations and descriptions of their operation.  
\_\_\_\_\_ 4. Label the parts of a gauge circuit.  
\_\_\_\_\_ 5. Match the names of the parts of a gauge circuit to descriptions of their functions.  
\_\_\_\_\_ 6. Diagnose the cause(s) of faulty gauge readings. (Assignment Sheet 1)  
\_\_\_\_\_ 7. Inspect, test, repair, and replace the components of a gauge circuit. (Job Sheet 1)

**MODULE 9B — Electronic Instrument Clusters**

- \_\_\_\_\_ 8. Label the parts of an electronic instrument cluster, warning light, indicator light, and driver information circuit.  
\_\_\_\_\_ 9. Match the names of the parts of an electronic instrument cluster, warning light, indicator light, and driver information circuit to descriptions of their functions.  
\_\_\_\_\_ 10. Diagnose the cause(s) of the faulty operation of an electronic instrument cluster, warning light, indicator light, and driver information circuit. (Assignment Sheet 2)  
\_\_\_\_\_ 11. Inspect, test, repair, and replace the components of an electronic instrument cluster, warning light, indicator light, and driver information circuit. (Job Sheet 2)

**MODULE 9C — Audible Warning Devices**

- \_\_\_\_\_ 12. List the types of driver information commonly given by an audible warning device.  
\_\_\_\_\_ 13. Label the parts of an audible warning device circuit.  
\_\_\_\_\_ 14. Match the names of the parts of an audible warning device circuit to descriptions of their functions.  
\_\_\_\_\_ 15. Diagnose the cause(s) of the faulty operation of audible warning devices. (Assignment Sheet 3)  
\_\_\_\_\_ 16. Inspect, test, repair, and replace components of audible warning device circuits. (Job Sheet 3)

**10. DIAGNOSING AND REPAIRING HORNS AND WIPERS/WASHERS**

**MODULE A — Horns**

- \_\_\_\_\_ 1. Label the parts of a horn circuit.  
\_\_\_\_\_ 2. Match the names of the parts of a horn circuit to description of their functions.  
\_\_\_\_\_ 3. Diagnose the cause of horn problems. (Assignment Sheet 1)  
\_\_\_\_\_ 4. Inspect, test, repair, and replace the components of a horn circuit. (Job Sheet 1)

**MODULE B — Wipers and Washers**

- \_\_\_\_\_ 5. Label the parts of a wiper circuit.  
\_\_\_\_\_ 6. Match the names of the parts of a wiper circuit to descriptions of their functions.  
\_\_\_\_\_ 7. Diagnose the cause of wiper problems. (Assignment Sheet 2)  
\_\_\_\_\_ 8. Inspect, test, repair, and replace intermittent (pulsing) wiper controls. (Job Sheet 2)  
\_\_\_\_\_ 9. Inspect, test, and replace the components of a wiper circuit. (Job Sheet 3)  
\_\_\_\_\_ 10. Label the parts of a windshield washer circuit.  
\_\_\_\_\_ 11. Match the names of the parts of a windshield washer circuit to descriptions of their functions.  
\_\_\_\_\_ 12. Diagnose the cause of windshield washer problems. (Assignment Sheet 3)  
\_\_\_\_\_ 13. Inspect, test, repair, and replace the components of a windshield washer circuit. (Job Sheet 4)

**11. DIAGNOSING AND REPAIRING BODY ELECTRICAL ACCESSORIES**

**Module 11A — Power Windows**

- \_\_\_\_\_ 1. Label the parts of a power window indicated on an illustration.  
\_\_\_\_\_ 2. Match the names of the parts of a power window to descriptions of their functions.  
\_\_\_\_\_ 3. Diagnose the cause of power window problems. (Assignment Sheet 1)  
\_\_\_\_\_ 4. Inspect, test, repair, and replace the parts of a power window. (Job Sheet 1)

**Module 11B — Power Seats**

- \_\_\_\_\_ 5. Label the parts of a power seat and seat memory controls indicated on an illustration.  
\_\_\_\_\_ 6. Match the names of the parts of a power seat and seat memory controls to descriptions of their functions.  
\_\_\_\_\_ 7. Diagnose the cause of power seat and seat memory controls problems. (Assignment Sheet 2)  
\_\_\_\_\_ 8. Inspect, test, adjust, repair, and replace the parts of a power seat and seat memory controls. (Job Sheet 2)

**Module 11C — Rear Window Defogger**

- \_\_\_\_\_ 9. Label the parts of a rear window defogger indicated on an illustration.  
\_\_\_\_\_ 10. Match the names of the parts of a rear window defogger to descriptions of their functions.  
\_\_\_\_\_ 11. Diagnose the cause of rear window defogger problems. (Assignment Sheet 3)  
\_\_\_\_\_ 12. Inspect, test, repair, and replace the parts of a rear window defogger. (Job Sheet 3)

**Module 11D — Power Door Locks**

- \_\_\_\_\_ 13. Label the parts of an electric door lock indicated on an illustration.  
\_\_\_\_\_ 14. Match the names of the parts of an electric door lock to descriptions of their functions.  
\_\_\_\_\_ 15. Diagnose the cause of electric door lock problems. (Assignment Sheet 4)  
\_\_\_\_\_ 16. Inspect, test, repair, and replace the parts of an electric door lock. (Job Sheet 4)  
\_\_\_\_\_ 17. Label the parts of a keyless and remote lock/unlock device indicated on an illustration.  
\_\_\_\_\_ 18. Match the names of the parts of a keyless and remote lock/unlock device to descriptions of their functions.  
\_\_\_\_\_ 19. Diagnose the cause of problems with keyless and remote lock/unlock devices. (Assignment Sheet 5)  
\_\_\_\_\_ 20. Inspect, test, repair, and replace the parts of a keyless and remote lock/unlock device. (Job Sheet 5)

**Module 11E — Power Sunroofs and Convertible Tops**

- \_\_\_\_\_ 21. Label the parts of an electric sunroof indicated on an illustration.  
\_\_\_\_\_ 22. Match the names of the parts of an electric sunroof to descriptions of their functions.  
\_\_\_\_\_ 23. Label the parts of an electric convertible top indicated on an illustration.  
\_\_\_\_\_ 24. Match the names of the parts of an electric convertible top to descriptions of their functions.  
\_\_\_\_\_ 25. Diagnose the cause of electric sunroof and convertible top problems. (Assignment Sheet 6)  
\_\_\_\_\_ 26. Inspect, test, repair, and replace the parts of an electric sunroof. (Job Sheet 6)  
\_\_\_\_\_ 27. Inspect, test, repair, and replace the parts of an electric convertible top. (Job Sheet 7)

Date/Initial

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**Module 11F — Power Mirrors**

- \_\_\_\_\_ 28. Label the parts of an electrically operated/heated mirror indicated on an illustration.
- \_\_\_\_\_ 29. Match the names of parts of an electrically operated/heated mirror to descriptions of their functions.
- \_\_\_\_\_ 30. Diagnose the cause of electrically operated/heated mirror problems. (Assignment Sheet 7)
- \_\_\_\_\_ 31. Inspect, test, repair, and replace the parts of an electrically operated/heated mirror. (Job Sheet 8)

**12. DIAGNOSING AND REPAIRING MISCELLANEOUS ACCESSORIES**

**Module 12A — Sound Systems, Cigar Lighters, and Clocks**

- \_\_\_\_\_ 1. Label the parts of a sound system indicated on an illustration.
- \_\_\_\_\_ 2. Match the names of the parts of a sound system to descriptions of their functions.
- \_\_\_\_\_ 3. Label the parts of a power antenna indicated on an illustration.
- \_\_\_\_\_ 4. Match the names of the parts of a power antenna to descriptions of their functions.
- \_\_\_\_\_ 5. Diagnose the cause of radio reception problems. (Assignment Sheet 1)
- \_\_\_\_\_ 6. Inspect, test, repair, and replace the parts of a sound system. (Job Sheet 1)
- \_\_\_\_\_ 7. Inspect, test, repair, and replace the parts of a power antenna. (Job Sheet 2)
- \_\_\_\_\_ 8. Inspect, test, and replace noise suppression components. (Job Sheet 3)
- \_\_\_\_\_ 9. Identify the component(s) (unit) causing audio system problems. (Job Sheet 4)
- \_\_\_\_\_ 10. Remove and reinstall audio system components (unit). (Job Sheet 5)
- \_\_\_\_\_ 11. Inspect, test, repair, and replace the parts of a cigar lighter. (Job Sheet 6)
- \_\_\_\_\_ 12. Inspect, test, repair, and replace the parts of a clock. (Job Sheet 7)
- \_\_\_\_\_ 13. Program an electric radio and clock. (Job Sheet 8)

**Module 12B — Cruise Control Systems**

- \_\_\_\_\_ 14. Label the parts of a cruise control system indicated on an illustration.
- \_\_\_\_\_ 15. Match the names of the parts of a cruise control system to descriptions of their functions.
- \_\_\_\_\_ 16. Diagnose the cause of cruise control problems. (Assignment Sheet 2)
- \_\_\_\_\_ 17. Inspect, test, adjust, repair, and replace the parts of a cruise control system. (Job Sheet 9)

**Module 12C — Anti-Theft Systems**

- \_\_\_\_\_ 18. Label the parts of an anti-theft system indicated on an illustration.
- \_\_\_\_\_ 19. Match the names of the parts of an anti-theft system to descriptions of their functions.
- \_\_\_\_\_ 20. Diagnose the cause of anti-theft system problems. (Assignment Sheet 3)
- \_\_\_\_\_ 21. Inspect, test, repair, and replace the parts of anti-theft systems. (Job Sheet 10)

**Module 12D — Restraint Systems**

- \_\_\_\_\_ 22. Label the parts of an airbag system indicated on an illustration.
- \_\_\_\_\_ 23. Match the names of the parts of an airbag system to descriptions of their functions.
- \_\_\_\_\_ 24. List steps to take to prevent the accidental deployment of an airbag.
- \_\_\_\_\_ 25. Diagnose the cause(s) of the airbag warning light staying on or flashing. (Assignment Sheet 4)
- \_\_\_\_\_ 26. Inspect, test, repair, and replace the parts of an airbag system. (Job Sheet 11)
- \_\_\_\_\_ 27. Label the parts of a motorized seat belt indicated on an illustration.
- \_\_\_\_\_ 28. Match the names of the parts of a motorized seat belt to descriptions of their functions.
- \_\_\_\_\_ 29. Diagnose the cause of improper operation of motorized seat belts. (Assignment Sheet 5)
- \_\_\_\_\_ 30. Inspect, test, repair, and replace the parts of motorized seat belts. (Job Sheet 12)

Date/Initial

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