CDX Tasksheet Number: MHT5A003

Student/Intern Information

Name _____ Date _____ Class _____

Vehicle, Customer, and Service Information

Vehicle used for this activity:

Year _____ Make _____ Model _____

Odometer _____ VIN _____

Materials Required

- Vehicle or simulator with possible electrical concerns
- Vehicle manufacturer's repair information, including schematic wiring diagrams
- Digital volt-ohmmeter (DVOM), current clamp
- Vehicle/component lifting equipment, if applicable

Task-Specific Safety Considerations

- Activities require you to measure electrical values. Always ensure that the supervisor/instructor checks test instrument connections prior to connecting power or taking measurements. High current flows can be dangerous; avoid accidental short circuits or grounding a battery's positive connections.
- Activities may require test-driving the vehicle on the school grounds or on a hoist, both of which carry severe risks. Attempt this task only with full permission from your supervisor/instructor, and follow all the guidelines exactly.
- Lifting equipment and machines such as vehicle jacks and stands, vehicle hoists, and engine hoists are important tools that increase productivity and make the job easier. However, they can also cause severe injury or death if used improperly. Make sure you follow the manufacturer's operation procedures. Also make sure you have your supervisor's/instructor's permission to use any particular type of lifting equipment.
- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with federal, state, and local regulations.
- Always wear the correct protective eyewear and clothing and use the appropriate safety equipment, as well as fender covers, seat protectors, and floor mat protectors.
- Make sure you understand and observe all legislative and personal safety procedures when carrying out practical assignments. If you are unsure of what these are, ask your supervisor/instructor.

▶ TASK Demonstrate proper use of test equipment when measuring source voltage, voltage drop (including grounds), current flow, continuity, and resistance.

MTST V.A.3; P1

Time off _____

Time on _____

Total time _____

Student Instructions: Read through the entire procedure prior to starting. Prepare your workspace and any tools or parts that may be needed to complete the task. When directed by your supervisor/instructor, begin the procedure to complete the task and check the box as each step is finished.

Note: This tasksheet will require the use of a vehicle or simulator with an electrical fault. Ask your supervisor/instructor which vehicle or simulator you are to use. Be sure to follow the correct steps for connecting your DVOM or ammeter to check for amperage/current flow. Have your supervisor/instructor check your connections. Improper connection of the DVOM may damage your meter.

Procedure:	Step Completed
1. Using the appropriate service information for the vehicle you are working on, research how to check applied voltages, circuit voltages, and voltage drops in electrical/electronic circuits. List the circuits, including the lead connections.	
a. Applied voltages:	☐
b. Circuit voltages:	☐
c. Voltage drops:	☐
2. Prepare the DVOM to measure DC volts.	
a. List the steps necessary in preparing your DVOM to measure voltage:	☐
3. Have your supervisor/instructor verify your research. Supervisor's/instructor's initials:	☐
4. Using the appropriate service information, check applied voltages, circuit voltages, and voltage drops in electrical/electronic circuits. Ask your supervisor/instructor for a vehicle and circuits to check.	
a. Applied voltages: List the circuit being checked:	☐
i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐

ii. If No, describe the recommended corrective action(s):	☐
b. Circuit voltages: List the circuit being checked:	☐
i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐
ii. If No, describe the recommended corrective action(s):	☐
c. Voltage drops: List the circuit being checked:	☐
i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐
ii. If No, describe the recommended corrective action(s):	☐
5. Research how to measure current flow in electrical/electronic circuits and components as outlined in the manufacturer's workshop materials. List the circuits, including the lead connections:	
a. DVOM current measurements: Draw a diagram showing the lead connection and circuit.	☐

b. DVOM with inductive clamp current measurements: Draw a diagram showing the lead connection and circuit.	☐
6. Prepare the DVOM to measure DC current.	
a. List the steps necessary in preparing your DVOM to measure current:	☐
7. Have your supervisor/instructor verify your research. Supervisor's/instructor's initials:	☐
8. Check current flow in electrical/electronic circuits and components as outlined in the manufacturer's workshop materials. Ask your supervisor/instructor for a vehicle and circuits to check. (**Note:** Ensure that the meter is connected correctly when measuring current draw. Damage may occur to circuits and the test equipment if connections are made incorrectly.)	
a. List the circuit being checked:	☐
i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐
ii. If No, describe the recommended corrective action(s):	☐
b. List the circuit being checked:	☐
i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐
ii. If No, describe the recommended corrective action(s):	☐

c. List the circuit being checked:	☐
i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐
ii. If No, describe the recommended corrective action(s):	☐
9. Research how to check resistance in electrical/electronic circuits and components as outlined in the manufacturer's workshop materials. List the circuits, including the lead connections:	
a. DVOM resistance measurements: Draw a diagram showing the lead connection and circuit.	☐
10. Prepare the DVOM to measure resistance.	
a. List the steps necessary in preparing your DVOM to measure resistance:	☐
11. Explain why resistance measurements should only be undertaken without power connected to the circuit under test:	☐
12. Have your supervisor/instructor verify your research. Supervisor's/instructor's initials:	☐

13. Using the appropriate service information, check resistance in electrical/electronic circuits and components. Ask your supervisor/instructor for a vehicle and circuits to check. (**Note:** Ensure that the meter is correctly connected and no power is applied to the circuit under test when measuring resistance.)	
a. List the circuit/component being checked:	☐
i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐
ii. If No, describe the recommended corrective action(s):	☐
b. List the circuit/component being checked:	☐
i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐
ii. If No, describe the recommended corrective action(s):	☐
c. List the circuit/component being checked:	☐
i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐
ii. If No, describe the recommended corrective action(s):	☐

14. Prepare the DVOM to measure continuity. Continuity is measured using the Ohms scale on the DVOM.	
a. List the steps necessary in preparing your DVOM to measure continuity:	☐
b. Explain how to connect the meter leads:	☐
c. What readings would you expect the DVOM to indicate when the circuit has the following?	
i. Good continuity:	☐
ii. Poor continuity:	☐
15. Check for circuit continuity in electrical/electronic circuits as outlined in the manufacturer's workshop materials. Ask your supervisor/instructor for a vehicle and circuits to check continuity.	
a. Circuit 1: i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐
ii. If No, describe the recommended corrective action(s):	☐
b. Circuit 2: i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐
ii. If No, describe the recommended corrective action(s):	☐

c. Circuit 3: i. Within manufacturer's specifications: Yes: ☐ No: ☐	☐
ii. If No, describe the recommended corrective action(s):	☐
16. Return the vehicle to its beginning condition, and return any tools you used to their proper locations.	☐
17. Discuss your findings with your supervisor/instructor.	☐

Non-Task-Specific Evaluations:	**Step Completed**
1. Tools and equipment were used as directed and returned in good working order.	☐
2. Complied with all general and task-specific safety standards, including proper use of any personal protection equipment.	☐
3. Completed the task in an appropriate time frame (recommendation: 1.5 or 2 times the flat rate).	☐
4. Left the workspace clean and orderly.	☐
5. Cared for customer property and returned it undamaged.	☐

Student signature _____ Date _____

Comments:

Have your supervisor/instructor verify satisfactory completion of this procedure, any observations made, and any necessary action(s) recommended.

Evaluation Instructions: The scoring box below is intended to act as a guide for both student and supervisor/instructor. Each criterion listed will help students to understand what is expected of them and help supervisors/instructors articulate the level of success at a particular task. The scoring is set up to allow a second attempt at each task (see the Test and Retest columns). Scoring is also designed to award students points only for task criteria that were completed correctly. Points are lost for failure to complete the employability requirements (see Non-Task–Specific Evaluation criteria). When all criteria are evaluated, tally the points for a total at the bottom of each column.

Tasksheet Scoring

	Test		Retest	
Evaluation Items	**Pass**	**Fail**	**Pass**	**Fail**
Task-Specific Evaluation	**(1 pt)**	**(0 pts)**	**(1 pt)**	**(0 pts)**
Student used the appropriate service information to research how to check applied voltage, circuit voltage, voltage drop, current flow, resistance, and continuity.				
Student successfully checked applied voltage, circuit voltage, voltage drop, current flow, resistance, and continuity.				
Student used a DVOM and current clamp as directed and required.				
Student reinstalled all removed components undamaged and in working order.				
Non-Task-Specific Evaluation	**(0 pts)**	**(−1 pt)**	**(0 pts)**	**(−1 pt)**
Student successfully completed at least three of the non-task–specific steps.				
Student successfully completed all five of the non-task–specific steps.				
Total Score: <total # of points/4 = %>				

Supervisor/Instructor:

Supervisor/instructor signature _____ Date _____

Comments:

Retest supervisor/instructor signature _____ Date _____

Comments: