Electrical/Electronic Systems: Charging System Diagnosis and Repair

Student/intern information:

Name _____ Date _____ Class _____

Vehicle used for this activity:

Year _____ Make _____ Model _____

Odometer _____ VIN _____

Time off _____

Time on _____

Total time _____

Learning Objective/Task	CDX Tasksheet Number	2013 MLR NATEF Reference Number; Priority Level	2013 AST NATEF Reference Number; Priority Level	2013 MAST NATEF Reference Number; Priority Level
• Inspect, adjust, or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment.	C317	6D2; P-1	6D3; P-1	6D3; P-1
• Perform charging system output test; determine necessary action.	C315	6D1; P-1	6D1; P-1	6D1; P-1
• Perform charging circuit voltage drop tests; determine necessary action.	C319	6D4; P-1	6D5; P-1	6D5; P-1
• Remove, inspect, and reinstall generator (alternator).	C318	6D3; P-1	6D4; P-1	6D4; P-1
• Diagnose (troubleshoot) charging system for the cause of undercharge, no-charge, and overcharge conditions.	C316		6D2; P-1	6D2; P-1

Materials Required

- Vehicle/simulator
- Belt tension measuring device
- Charging system tester
- Tachometer, either hand-held or the vehicle's tachometer, if equipped
- Digital voltmeter
- Exhaust hose/s and wheel chocks

Some Safety Issues to Consider

- If you need to start the vehicle, you should ensure that the parking brake is firmly applied; if necessary, use wheel chocks to prevent the vehicle from moving when the vehicle is started to verify the completion of these tasks.
- When running any vehicles in the shop, make sure you use the shop's exhaust ventilation system to discharge all exhaust gas safely outside.
- Only students who have their supervisor's/instructor's direct permission should perform this task due to the safety concerns involved.

- Diagnosis of this fault 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.
- Use extreme caution when working around batteries. Immediately remove any electrolyte that may come into contact with you. Electrolyte is a mixture of sulfuric acid and water. Please consult with the shop safety and emergency procedures when working with or around batteries
- Never exceed 16 volts when charging a 12-volt battery. Overheating and explosion hazards are greatly increased.
- Be cautious around electricity. High voltage (enough to injure or kill you) is present on many vehicles. Ignition systems, hybrid vehicles, and 42-volt electrical systems are just a few hazards to be careful of.
- Accidental deployment of the airbag system could happen if you inadvertently probe the wrong wire. Most manufacturers use yellow-colored wiring to denote wiring for the airbag system. Always be aware of the system/circuit you are working on.
- 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 ith local, state, and federal safety and environmental regulations.

Performance Standard

0—No exposure: No information or practice provided during the program; complete training required

1—Exposure only: General information provided with no practice time; close supervision needed; additional training required

2—Limited practice: Has practiced job during training program; additional training required to develop skill

3—Moderately skilled: Has performed job independently during training program; limited additional training may be required

4—Skilled: Can perform job independently with no additional training