

APPENDIX 2

2017 ASE Correlation Chart

Electrical/Electronic (A6)

MLR- Maintenance & Light Repair

AST- Auto Service Technology (Includes MLR)

MAST- Master Auto Service Technology (Includes MLR and AST)

| | Task | Priority | MLR | AST | MAST | Text Page # | Task Page # |
|---|---|----------|-------|-----|------|-------------|--------------|
| A. General: Electrical Systems Diagnosis | | | | | | | |
| 1. | Research vehicle service information including vehicle service history, service precautions, and technical service bulletins. | P-1 | ✓ | ✓ | ✓ | 1-5 | 1-6 |
| 2. | Demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law). | P-1 | ✓ | ✓ | ✓ | 53-88 | 16-24; 32 |
| 3. | Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow and resistance | P-1 | ✓ | ✓ | ✓ | 95-109 | 25 |
| 4. | Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits. | P-1 | ✓ | ✓ | ✓ | 64-70 | 25 |
| 5. | Demonstrate proper use of a test light on an electrical circuit. | P-1 | (P-2) | ✓ | ✓ | 94 | 26 |
| 6. | Use fused jumper wires to check operation of electrical circuits. | P-1 | (P-2) | ✓ | ✓ | 93 | 27 |
| 7. | Use wiring diagrams during the diagnosis (troubleshooting) of | P-1 | | | ✓ | 134-150 | 34 |

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| | electrical/electronic circuit problems. | | | | | | |
| 8. | Diagnose the cause(s) of excessive key-off battery drain (parasitic draw); determine needed action. | P-1 | ✓ | ✓ | ✓ | 231-235 | 42 |
| 9. | Inspect and test fusible links, circuit breakers, and fuses; determine needed action. | P-1 | ✓ | ✓ | ✓ | 122-127 | 29 |
| 10. | Inspect, test, repair, and/or replace components, connectors, terminals, harnesses, and wiring in electrical/electronic systems (including solder repairs) | P-1 | | ✓ | ✓ | 128-132 | 30; 31; 37 |
| 11. | Check electrical/electronic circuit waveforms; interpret readings and determine needed repairs. | P-2 | | | ✓ | 111-117; 298 | 28 |
| 12. | Repair data bus wiring harness. | P-1 | | | ✓ | 129-132 | 31 |
| B. Battery Diagnosis and Service | | | | | | | |
| 1. | Perform battery state-of-charge test; determine needed action. | P-1 | ✓ | ✓ | ✓ | 225-228 | 43 |
| 2. | Confirm proper battery capacity for vehicle application; perform battery capacity and load test; determine needed action. | P-1 | ✓ | ✓ | ✓ | 226-228 | 44 |
| 3. | Maintain or restore electronic memory functions. | P-1 | ✓ | ✓ | ✓ | 233-235 | 45 |
| 4. | Inspect and clean battery; fill battery cells; check battery cables, connectors, clamps, and hold-downs. | P-1 | ✓ | ✓ | ✓ | 224-225 | 47 |
| 5. | Perform slow/fast battery charge according to manufacturer's recommendations. | P-1 | ✓ | ✓ | ✓ | 228-231 | 48 |
| 6. | Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply. | P-1 | ✓ | ✓ | ✓ | 231 | 49 |
| 7. | Identify safety precautions for high voltage systems on hybrid electric, hybrid electric, and diesel vehicles. | P-2 | ✓ | ✓ | ✓ | 35-37 | 11; 12 |

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| 8. | Identify electrical/electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery. | P-1 | ✓ | ✓ | ✓ | 233-235 | 46 |
| 9. | Identify hybrid vehicle auxiliary (12v) battery service, repair, and test procedures. | P-3 | ✓ | ✓ | ✓ | 223-231 | 50 |
| C. Starting System Diagnosis and Repair | | | | | | | |
| 1. | Perform starter current draw tests; determine needed action. | P-1 | ✓ | ✓ | ✓ | 254-265 | 53 |
| 2. | Perform starter circuit voltage drop tests; determine needed action. | P-1 | ✓ | ✓ | ✓ | 252-254 | 54 |
| 3. | Inspect and test starter relays and solenoids; determine needed action. | P-2 | ✓ | ✓ | ✓ | 254 | 52 |
| 4. | Remove and install starter in a vehicle. | P-1 | ✓ | ✓ | ✓ | 255; 257 | 55 |
| 5. | Inspect and test switches, connectors, and wires of starter control circuits; determine needed action. | P-2 | ✓ | ✓ | ✓ | 254 | 52 |
| 6. | Differentiate between electrical and engine mechanical problems that cause a slow-crank or a no-crank condition | P-2 | | ✓ | ✓ | 255 | 53 |
| 7. | Demonstrate knowledge of an automatic idle-stop/start-stop system. | P-2 | ✓ | ✓ | ✓ | 248-249 | 51 |
| D. Charging System Diagnosis and Repair | | | | | | | |
| 1. | Perform charging system output test; determine needed action. | P-1 | ✓ | ✓ | ✓ | 286 | 59 |
| 2. | Diagnose (troubleshoot) charging system for causes of undercharge, no-charge, or overcharge conditions. | P-1 | | ✓ | ✓ | 279-287 | 58; 60 |
| 3. | Inspect, adjust, and/or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment | P-1 | ✓ | ✓ | ✓ | 281-282 | 62 |
| 4. | Remove, inspect, and/or replace generator (alternator). | P-1 | (P-2) | ✓ | ✓ | 287; 291-292 | 62 |

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| 5. | Perform charging circuit voltage drop tests; determine needed action. | P-1 | ✓ | ✓ | ✓ | 285-286 | 61 |
| E. Lighting Systems Diagnosis and Repair | | | | | | | |
| 1. | Diagnose (troubleshoot) the causes of brighter-than-normal, intermittent, dim, or no light operation; determine needed action. | P-1 | ✓ | ✓ | ✓ | 308-311 | 68 |
| 2. | Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed. | P-1 | | ✓ | ✓ | 301-305 | 69 |
| 3. | Aim headlights. | P-2 | ✓ | ✓ | ✓ | 314-315 | 70 |
| 4. | Identify system voltage and safety precautions associated with high-intensity discharge headlights | P-2 | ✓ | ✓ | ✓ | 309-312 | 71 |
| F. Instrument Cluster and Driver Information Systems Diagnosis and Repair | | | | | | | |
| 1. | Inspect and test gauges and gauge sending units for causes of abnormal readings; determine needed action. | P-2 | | ✓ | ✓ | 323-324; 328-331 | 72 |
| 2. | Diagnose (troubleshoot) the causes of incorrect operation of warning devices and other driver information systems; determine needed action. | P-2 | | ✓ | ✓ | 321-331 | 73; 74; 75 |
| 3. | Reset maintenance indicators as required. | P-2 | ✓ | ✓ | ✓ | 323 | 74 |
| G. Repair Body Electrical Systems Diagnosis and Repair | | | | | | | |
| 1. | Diagnose operation of comfort and convenience accessories and related circuits (such as: power window, power seats, pedal height, power locks, truck locks, remote start, moon roof, sun roof, sun shade, remote keyless entry, voice activation, steering wheel controls, back-up camera, park assist, cruise control, and auto dimming headlamps); determine needed repairs | P-2 | | ✓ | ✓ | 314; 322; 372-386 | 79; 80; 81; 82; 85; 86; 87 |

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| 2. | Diagnose operation of security/anti-theft systems and related circuits (such as: theft deterrent, door locks, remote keyless entry, remote start, and starter/fuel disable); determine needed repairs. | P-2 | | ✓ | ✓ | 338-345; 386-389 | 76; 84 |
| 3. | Diagnose operation of entertainment and related circuits (such as: radio, DVD, remote CD changer, navigation, amplifiers, speakers, antennas, and voice-activated accessories); determine needed repairs. | P-3 | | ✓ | ✓ | 404-417 | 36; 88 |
| 4. | Diagnose operation of safety systems and related circuits (such as: horn, airbags, seat belt pretensioners, occupancy classification, wipers, washers, speed control/collision avoidance, heads-up display, park assist, and back-up camera); determine needed repairs | P-1 | | ✓ | ✓ | 324-325; 347-360; 362-370; 392-402 | 10; 81; 83; 85; 86; 87 |
| 5. | Diagnose body electronic systems circuits using a scan tool; check for module communication errors (data bus systems); determine needed action. | P-2 | | ✓ | ✓ | 331 | 40; 83 |
| 6. | Describe the process for software transfer, software updates, or reprogramming of electronic modules | P-2 | | ✓ | ✓ | 233 | 39 |