**VOCATIONAL SKILLS RECORDWILSON WORKFORCE CENTER**

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| Student Name  | PID#  | Entry Date: | **RATING SCALE****4 (Exemplary) = 90%-100%****3 (Satisfactory) = 80%-89%** **2 (Developing) = 60%-79%** **1 (Unsatisfactory) = 40%-59%****0 (Not Attempted) = N/A** |
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| Vocational Objective  | Exit Date: |
| **AUTO MECHANICS****Automotive Service Technician**O\*NET-SOC 49-3023.00 Course Hours: 750 |
|  | Grade Period |
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|  **SKILLS**  | 1 | 2 | 3 | 4 | 5 | 6 | FINAL |
| **A0 WORKPLACE READINESS BEHAVIORS** |  |  |  |  |  |  |  |
| A 1 Attendance / Punctuality |  |  |  |  |  |  |  |
| A 2 Personal Presentation |  |  |  |  |  |  |  |
| A 3 Attention to Task / Concentration |  |  |  |  |  |  |  |
| A 4 Safety Awareness and Practices  |  |  |  |  |  |  |  |
| A 5 Response to Supervision and Feedback |  |  |  |  |  |  |  |
| A 6 Follows Instructions |  |  |  |  |  |  |  |
| A 7 Initiative and Dependability |  |  |  |  |  |  |  |
| A 8 Communication / Interpersonal Skills |  |  |  |  |  |  |  |
| A 9 Attention to Detail / Quality Work |  |  |  |  |  |  |  |
| A 10 Care with Material / Property |  |  |  |  |  |  |  |
| A 11 Work Energy / Stamina |  |  |  |  |  |  |  |
| A 12 Work Tolerance / Persistence |  |  |  |  |  |  |  |
| A 13 Meets Work Schedules |  |  |  |  |  |  |  |
| **I. MAINTENANCE AND LIGHT VEHICLE** |  |  |  |  |  |  |  |
| **ER-A. General** |  |  |  |  |  |  |  |
| 1. Inspect vehicles for damage and record findings so that necessary repairs can be made. |  |  |  |  |  |  |  |
| 2. Estimate costs of vehicle repair. |  |  |  |  |  |  |  |
| 3. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins. |  |  |  |  |  |  |  |
| 4. Verify operation of the instrument panel engine warning indicators. |   |  |  |  |  |  |  |
| 5. Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action. |  |  |  |  |  |  |  |
| 6. Install engine covers using gaskets, seals, and sealers as required. |  |  |  |  |  |  |  |
| 7. Verify engine mechanical timing. |  |  |  |  |  |  |  |
| 8. Perform common fastener and thread repair, to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert.  |  |  |  |  |  |  |  |
| 9. Identify service precautions related to service of the internal combustion engine of a hybrid vehicle. |  |  |  |  |  |  |  |
| **ER-B. Cylinder Head and Valve Train** |  |  |  |  |  |  |  |
| 1, Adjust valves (mechanical or hydraulic lifters). |  |  |  |  |  |  |  |
| 2. Identify components of the cylinder head and valve train. |  |  |  |  |  |  |  |

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|  **SKILLS**  | 1 | 2 | 3 | 4 | 5 | 6 | FINAL |
| **ER-C. Lubrication and Cooling Systems** |  |  |  |  |  |  |  |
| 1. Perform cooling system pressure and dye tests to identify leaks; check coolant condition and level; inspect and test radiator, pressure cap, coolant recovery tank, heater core, and galley plugs; determine necessary action. |  |  |  |  |  |  |  |
| 2. Inspect, replace, and/or adjust drive belts, tensioners, and pulleys; check pulley and belt alignment. |  |  |  |  |  |  |  |
| 3. Remove, inspect, and replace thermostat and gasket/seal. |  |  |  |  |  |  |  |
| 4. Inspect and test coolant; drain and recover coolant; flush and refill cooling system; use proper fluid type per manufacturer specification; bleed air as required. |  |  |  |  |  |  |  |
| 5. Perform engine oil and filter change; use proper fluid type per manufacturer specification; reset maintenance reminder as required |  |  |  |  |  |  |  |
| 6. Identify components of the lubrication and cooling systems. |  |  |  |  |  |  |  |
| **II. AUTOMATIC TRANSMISSION AND TRANSAXLE** |  |  |  |  |  |  |  |
| **AT-A. General** |  |  |  |  |  |  |  |
| 1. Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins. |  |  |  |  |  |  |  |
| 2. Check fluid level in a transmission or a transaxle equipped with a dip-stick. |  |  |  |  |  |  |  |
| 3. Check fluid level in a transmission or a transaxle not equipped with a dip-stick. |   |  |  |  |  |  |  |
| 4. Check transmission fluid condition; check for leaks. |  |  |  |  |  |  |  |
| 5. Identify drive train components and configuration. |  |  |  |  |  |  |  |
| **AT-B. In-Vehicle Transmission/Transaxle** |  |  |  |  |  |  |  |
| 1. Inspect, adjust, and/or replace external manual valve shift linkage, transmission range sensor/switch, and/or park/neutral positon switch. |  |  |  |  |  |  |  |
| 2. Inspect for leakage at external seals, gaskets, and bushings. |  |  |  |  |  |  |  |

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|  **SKILLS**  | 1 | 2 | 3 | 4 | 5 | 6 | FINAL |
| 3. Inspect, replace and/or align power train mounts. |  |  |  |  |  |  |  |
| 4. Drain and replace fluid and filter(s); use proper fluid type per manufacturer specifications. |  |  |  |  |  |  |  |
| **AT-C. Off-Vehicle Transmission and Transaxle** |  |  |  |  |  |  |  |
| 1. Describe the operational characteristics of a continuously variable transmission (CVT). |  |  |  |  |  |  |  |
| 2. Describe the operational characteristics of a hybrid vehicle drive train. |  |  |  |  |  |  |  |
| **III. MANUAL DRIVE TRAIN AND AXLES**  |  |  |  |  |  |  |  |
| **MD-A. General** |  |  |  |  |  |  |  |
| 1. Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins. |  |  |  |  |  |  |  |
| 2. Drain and refill manual transmission/transaxle and final drive unit; use proper fluid type per manufacturer specification. |  |  |  |  |  |  |  |
| 3. Check fluid condition; check for leaks. |  |  |  |  |  |  |  |
| 4. Identify manual drive train and axle components and configuration. |  |  |  |  |  |  |  |
| **MD-B. Clutch** |  |  |  |  |  |  |  |
| 1. Check and adjust clutch master cylinder fluid level; use proper fluid type per manufacturer specification. |  |  |  |  |  |  |  |
| 2. Check for hydraulic system leaks. |  |  |  |  |  |  |  |
| **MD-C. Transmission/Transaxle** |  |  |  |  |  |  |  |
| 1. Describe the operational characteristics of an electronically-controlled manual transmission/transaxle. |  |  |  |  |  |  |  |
| **MD-D. Drive Shaft, Half Shafts, Universal Joints and Constant-Velocity (CV) Joints (Front, Rear, All, and Four wheel drive)** |  |  |  |  |  |  |  |
| 1. Inspect, remove, and/or replace bearings, hubs, and seals. |  |  |  |  |  |  |  |
| 2. Inspect, service, and/or replace shafts, yokes, boots, and universal/CV joints. |  |  |  |  |  |  |  |
| 3. Inspect locking hubs. |  |  |  |  |  |  |  |
| 4. Check for leaks at drive assembly and transfer case seals; check vents; check fluid level; use proper fluid type per manufacturer specification. |  |  |  |  |  |  |  |

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|  **SKILLS**  | 1 | 2 | 3 | 4 | 5 | 6 | FINAL |
| **MD-E. Differential Case Assembly** |  |  |  |  |  |  |  |
| 1. Clean and inspect differential case; check for leaks; inspect housing vent. |  |  |  |  |  |  |  |
| 2. Check and adjust differential case fluid level; use proper fluid type per manufacturer specification. |  |  |  |  |  |  |  |
| 3. Drain and refill differential housing. |  |  |  |  |  |  |  |
| 4. Inspect and replace drive axle wheel studs. |  |  |  |  |  |  |  |
| **STEERING AND SUSPENSION SYSTEMS** |  |  |  |  |  |  |  |
| **IV. SUSPENSION AND STEERING SYSTEMS**  |  |  |  |  |  |  |  |
| **SS-A. General** |  |  |  |  |  |  |  |
| 1. Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins. |  |  |  |  |  |  |  |
| 2. Disable and enable supplemental restraint system (SRS); verify indicator lamp operation. |  |  |  |  |  |  |  |
| 3. Identify suspension and steering system components and configurations. |  |  |  |  |  |  |  |
|  3.1b2 Transmission or transaxle |  |  |  |  |  |  |  |
|  3.1b3 Transfer case |  |  |  |  |  |  |  |
|  3.1b4 Driveshaft |  |  |  |  |  |  |  |
|  3.1b5 Differential |  |  |  |  |  |  |  |
| **SS-B. Related Suspension and Steering Service** |  |  |  |  |  |  |  |
| 1. Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots. |  |  |  |  |  |  |  |
| 2. Inspect power steering fluid level and condition. |  |  |  |  |  |  |  |
| 3. Flush, fill, and bleed power steering system; use proper fluid type per manufacturer specification. |  |  |  |  |  |  |  |
| 4. Inspect for power steering fluid leakage. |  |  |  |  |  |  |  |
| 5. Remove, inspect, replace, and/or adjust power steering pump drive belt. |  |  |  |  |  |  |  |
| 6. Inspect and replace power steering hoses and fittings. |  |  |  |  |  |  |  |
| 7. Inspect pitman arm, relay (center link/intermediate) rod, idler arm, mountings, and steering linkage damper. |  |  |  |  |  |  |  |
| 8. Inspect tie rod ends (sockets), tie rod sleeves, and clamps. |  |  |  |  |  |  |  |
| 9. Inspect upper and lower control arms, bushings, and shafts. |  |  |  |  |  |  |  |

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|  **SKILLS**  | 1 | 2 | 3 | 4 | 5 | 6 | FINAL |
| 10. Inspect and replace rebound bumpers. |  |  |  |  |  |  |  |
| 11. Inspect track bar, strut rods/radius arms, and related mounts and bushings. |  |  |  |  |  |  |  |
| 12. Inspect upper and lower ball joints (with or without wear indicators). |  |  |  |  |  |  |  |
| 13. Inspect suspension system coil springs and spring insulators (silencers). |  |  |  |  |  |  |  |
| 14. Inspect suspension system torsion bars and mounts. |  |  |  |  |  |  |  |
| 15. Inspect and/or replace front/rear stabilizer bar (sway bar) bushings, brackets, and links. |  |  |  |  |  |  |  |
| 16. Inspect, remove, and/or replace strut cartridge or assembly; inspect mounts and bushings. |  |  |  |  |  |  |  |
| 17. Inspect front strut bearing and mount. |  |  |  |  |  |  |  |
| 18. Inspect rear suspension system lateral links/arms (track bars), control (trailing) arms. |  |  |  |  |  |  |  |
| 19. Inspect rear suspension system leaf spring(s), spring insulators (silencers), shackles, brackets, bushings, center pins/bolts, and mounts. |  |  |  |  |  |  |  |
| 20. Inspect, remove, and/or replace shock absorbers; inspect mounts and bushings. |  |  |  |  |  |  |  |
| 21. Inspect electric power steering assist system |  |  |  |  |  |  |  |
| 22. Identify hybrid vehicle power steering system electrical circuits and safety precautions. |  |  |  |  |  |  |  |
| 23. Describe the function of suspension and steering control systems and components, (i.e. active suspension, and stability control). |  |  |  |  |  |  |  |
| **SS-C. Wheel Alignment** |  |  |  |  |  |  |  |
| 1. Perform pre-alignment inspection; measure vehicle ride height. |  |  |  |  |  |  |  |
| 2. Describe alignment angles (camber, caster and toe). |  |  |  |  |  |  |  |
| **SS-D. Wheels and Tires** |  |  |  |  |  |  |  |
| 1. Inspect tire condition; identify tire wear patterns; check for correct tire size, application (load and speed ratings), and air pressure as listed on the tire information placard/label. |   |  |  |  |  |  |  |
| 2. Rotate tires according to manufacturer’s recommendations including vehicles equipped with tire pressure monitoring systems (TPMS). |  |  |  |  |  |  |  |
| 3. Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly. |  |  |  |  |  |  |  |

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|  **SKILLS**  | 1 | 2 | 3 | 4 | 5 | 6 | FINAL |
| 4. Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor. |  |  |  |  |  |  |  |
| 5. Inspect tire and wheel assembly for air loss; determine necessary action. |  |  |  |  |  |  |  |
| 6. Repair tire following vehicle manufacturer approved procedure. |  |  |  |  |  |  |  |
| 7. Identify indirect and direct tire pressure monitoring systems (TPMS); calibrate system; verify operation of instrument panel lamps. |  |  |  |  |  |  |  |
| 8. Demonstrate knowledge of steps required to remove and replace sensors in a tire pressure monitoring system (TPMS) including relearn procedure.  |  |  |  |  |  |  |  |
| **V. BRAKES** |  |  |  |  |  |  |  |
| **BR-A. General** |  |  |  |  |  |  |  |
| 1. Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins. |  |  |  |  |  |  |  |
| 2. Describe procedure for performing a road test to check brake system operation, including an anti- lock brake system (ABS). |  |  |  |  |  |  |  |
| 3. Install wheel and torque lug nuts. |  |  |  |  |  |  |  |
| 4. Identify brake system components and configuration. |  |  |  |  |  |  |  |
| **BR-B. Hydraulic System** |  |  |  |  |  |  |  |
| 1. Describe proper brake pedal height, travel and feel. |  |  |  |  |  |  |  |
| 2. Check master cylinder for external leaks and proper operation |  |  |  |  |  |  |  |
| 3. Inspect break lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, wear, and loose fittings/supports. |  |  |  |  |  |  |  |
| 4. Select, handle, store, and fill brake fluids to proper level; use proper fluid type per manufacturer specifications. |  |  |  |  |  |  |  |
| 5. Identify components of hydraulic brake warning light system. |  |  |  |  |  |  |  |
| 6. Bleed and/or flush brake system. |  |  |  |  |  |  |  |
| 7. Test brake fluid for contamination. |  |  |  |  |  |  |  |

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|  **SKILLS**  | 1 | 2 | 3 | 4 | 5 | 6 | FINAL |
| **BR-C. Drum Brakes** |  |  |  |  |  |  |  |
| 1. Remove, clean, and inspect brake drum; measure brake drum diameter; determine serviceability. |  |  |  |  |  |  |  |
| 2. Refinish brake drum and measure final drum diameter; compare with specification. |  |  |  |  |  |  |  |
| 3. Remove, clean, inspect, and/or replace brake shoes, springs, pins, clips, levers, adjusters/self- adjusters, other related brake hardware, and backing support plates; lubricate and reassemble. |   |  |  |  |  |  |  |
| 4. Inspect wheel cylinders for leaks and proper operation; remove and replace as needed. |  |  |  |  |  |  |  |
| 5. Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; make final checks and adjustments. |  |  |  |  |  |  |  |
| **BR-D. Disc Brakes** |  |  |  |  |  |  |  |
| 1. Remove and clean caliper assembly; inspect for leaks and damage/wear; determine necessary action. |  |  |  |  |  |  |  |
| 2. Inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine necessary action. |  |  |  |  |  |  |  |
| 3. Remove, inspect, and/or replace brake pads and retaining hardware; determine necessary action. |  |  |  |  |  |  |  |
| 4. Lubricate and reinstall caliper, brake pads, and related hardware; seat brake pads and inspect for leaks. |  |  |  |  |  |  |  |
| 5. Clean and inspect rotor and mounting surface, measure rotor thickness, thickness variation, and lateral runout; determine necessary action. |  |  |  |  |  |  |  |
| 6. Remove and reinstall/replace rotor. |  |  |  |  |  |  |  |
| 7. Refinish rotor on vehicle; measure final rotor thickness and compare with specification. |  |  |  |  |  |  |  |
| 8. Refinish rotor off vehicle; measure final rotor thickness and compare with specification. |  |  |  |  |  |  |  |
| 9. Retract and re-adjust caliper piston on an integral parking brake system. |  |  |  |  |  |  |  |
| 10. Check brake pad wear indicator; determine necessary action. |  |  |  |  |  |  |  |
| 11. Describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer’s recommendation. |  |  |  |  |  |  |  |

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| **BR-E. Power-Assist Units** |  |  |  |  |  |  |  |
| 1. Check brake pedal travel with, and without, engine running to verify proper power booster operation. |  |  |  |  |  |  |  |
|  2. Identify components of the brake power assist system (vacuum and hydraulic); check vacuum supply (manifold or auxiliary pump) to vacuum- type power booster. |  |  |  |  |  |  |  |
| **BR-F. Related Systems (i.e. Wheel Bearings, Parking Brakes, Electrical)** |  |  |  |  |  |  |  |
| 1. Remove, clean, inspect, repack, and install wheel bearings; replace seals; install hub and adjust bearings. |  |  |  |  |  |  |  |
| 2. Check parking brake system components for wear, binding, and corrosion; clean, lubricate, adjust and/or replace as needed. |  |  |  |  |  |  |  |
| 3. Check parking brake operation and parking brake indicator light system operation; determine necessary action. |  |  |  |  |  |  |  |
| 4. Check operation of brake stop light system. |  |  |  |  |  |  |  |
| 5. Replace wheel bearing and race. |  |  |  |  |  |  |  |
| 6. Inspect and replace wheel studs. |  |  |  |  |  |  |  |
| **BR-G. Electronic Brake, Traction Control, and Stability Control Systems** |  |  |  |  |  |  |  |
| 1. Identify traction control/vehicle stability control system components. |  |  |  |  |  |  |  |
| 2. Describe the operation of a regenerative braking system. |  |  |  |  |  |  |  |
| **VI. ELECTRICAL/ELECTRONIC SYSTEMS** |  |  |  |  |  |  |  |
| **EE-A. General** |  |  |  |  |  |  |  |
| 1. Research vehicle service information including vehicle service history, service precautions, and technical service bulletins. |  |  |  |  |  |  |  |
| 2. Demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm’s Law). |  |  |  |  |  |  |  |
| 3. Use wiring diagrams to trace electrical/electronic circuits. |  |  |  |  |  |  |  |

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|  **SKILLS**  | 1 | 2 | 3 | 4 | 5 | 6 | FINAL |
| 4. Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance. |  |  |  |  |  |  |  |
| 5. Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits. |  |  |  |  |  |  |  |
| 6. Use a test light to check operation of electrical circuits. |  |  |  |  |  |  |  |
| 7. Use fused jumper wires to check operation of electrical circuits. |  |  |  |  |  |  |  |
| 8. Measure key-off battery drain (parasitic draw). |  |  |  |  |  |  |  |
| 9. Inspect and test fusible links, circuit breakers, and fuses; determine necessary action. |  |  |  |  |  |  |  |
| 10. Repair and/or replace connectors, terminal ends, and wiring of electrical/electronic systems (including solder repair). |  |  |  |  |  |  |  |
|  11. Identify electrical/electronic system components and configuration. |  |  |  |  |  |  |  |
| **EE-B. Battery Service** |  |  |  |  |  |  |  |
| 1. Perform battery state-of-charge test; determine necessary action. |  |  |  |  |  |  |  |
| 2. Confirm proper battery capacity for vehicle application; perform battery capacity and load test; determine necessary action. |  |  |  |  |  |  |  |
| 3. Maintain or restore electronic memory functions. |  |  |  |  |  |  |  |
| 4. Inspect and clean battery; fill battery cells; check battery cables, connectors, clamps, and hold-downs. |  |  |  |  |  |  |  |
| 5. Perform slow/fast battery charge according to manufacturer’s recommendations. |  |  |  |  |  |  |  |
| 6. Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply. |  |  |  |  |  |  |  |
| 7. Identify safety precautions for high voltage systems on electric, hybrid-electric, and diesel vehicles. |  |  |  |  |  |  |  |

**VOCATIONAL SKILLS RECORDWILSON WORKFORCE CENTER**

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| Vocational Objective  | Exit Date: |
| **AUTO MECHANICS****Automotive Service Technician**O\*NET-SOC 49-3023.00 Course Hours: 750 |
|  | Grade Period |
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|  **SKILLS**  | 1 | 2 | 3 | 4 | 5 | 6 | FINAL |
| 8. Identify electrical/electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery. |  |  |  |  |  |  |  |
| 9. Identify hybrid vehicle auxiliary (12v) battery service, repair, and test procedures. |  |  |  |  |  |  |  |
| **EE-C. Starting System** |  |  |  |  |  |  |  |
| 1. Perform starter current draw test; determine necessary action. |  |  |  |  |  |  |  |
| 2. Perform starter circuit voltage drop tests; determine necessary action. |  |  |  |  |  |  |  |
| 3. Inspect and test starter relays and solenoids; determine necessary action. |  |  |  |  |  |  |  |
| 4. Remove and install starter in a vehicle. |  |  |  |  |  |  |  |
| 5. Inspect and test switches, connectors, and wires of starter control circuits; determine necessary action. |  |  |  |  |  |  |  |
| 6. Demonstrate knowledge of an automatic idle- stop/start-stop system. |  |  |  |  |  |  |  |
| **EE-D. Charging System** |  |  |  |  |  |  |  |
| 1. Perform charging system output test; determine necessary action. |  |  |  |  |  |  |  |
| 2. Inspect, adjust, and/or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment. |  |  |  |  |  |  |  |
| 3. Remove, inspect, and/or replace generator (alternator). |  |  |  |  |  |  |  |
| 4. Perform charging circuit voltage drop tests; determine necessary action. |  |  |  |  |  |  |  |
| **EE-E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems** |  |  |  |  |  |  |  |
| 1. Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed. |  |  |  |  |  |  |  |
| 2. Aim headlights. |  |  |  |  |  |  |  |
| 3. Identify system voltage and safety precautions associated with high-intensity discharge headlights. |  |  |  |  |  |  |  |

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|  **SKILLS**  | 1 | 2 | 3 | 4 | 5 | 6 | FINAL |
| 4. Disable and enable supplemental restraint system (SRS); verify indicator lamp operation. |  |  |  |  |  |  |  |
| 5. Remove and reinstall door panel. |  |  |  |  |  |  |  |
| 6. Describe the operation of keyless entry/remote-start systems. |  |  |  |  |  |  |  |
| 7. Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators. |  |  |  |  |  |  |  |
| 8. Verify windshield wiper and washer operation; replace wiper blades. |  |  |  |  |  |  |  |
| **VII. HEATING, VENTILATION, AND AIR CONDITIONING** |  |  |  |  |  |  |  |
| **AC-A. General** |  |  |  |  |  |  |  |
| 1. Research vehicle service information, including refrigerant/oil type, vehicle service history, service precautions, and technical service bulletins. |  |  |  |  |  |  |  |
| 2. Identify heating, ventilation and air conditioning (HVAC) components and configuration. |  |  |  |  |  |  |  |
| **AC-B. Refrigeration System Components** |  |  |  |  |  |  |  |
| 1. Inspect and replace A/C compressor drive belts, pulleys, and tensioners; visually inspect A/C components for signs of leaks; determine necessary action. |  |  |  |  |  |  |  |
| 2. Identify hybrid vehicle A/C system electrical circuits and the service/safety precautions. |  |  |  |  |  |  |  |
| 3. Inspect A/C condenser for airflow restrictions; determine necessary action. |  |  |  |  |  |  |  |
| **AC-C. Heating, Ventilation, and Engine Cooling Systems** |  |  |  |  |  |  |  |
| 1. Inspect engine cooling and heater systems hoses and pipes; determine necessary action |  |  |  |  |  |  |  |
| **AC-D. Operating Systems and Related Controls** |  |  |  |  |  |  |  |
| 1. Inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets; determine necessary action. |  |  |  |  |  |  |  |
| 2. Identify the source of A/C system odors. |  |  |  |  |  |  |  |

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|  **SKILLS**  | 1 | 2 | 3 | 4 | 5 | 6 | FINAL |
| **VIII. ENGINE PERFORMANCE** |  |  |  |  |  |  |  |
| **EP-A. General** |  |  |  |  |  |  |  |
| 1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins. |  |  |  |  |  |  |  |
| 2. Perform engine absolute manifold pressure tests (vacuum/boost); document results. |  |  |  |  |  |  |  |
| 3. Perform cylinder power balance test; document results.  |  |  |  |  |  |  |  |
| 4. Perform cylinder cranking and running compression tests; document results. |  |  |  |  |  |  |  |
| 5. Perform cylinder leakage test; document results. |  |  |  |  |  |  |  |
| 6. Verify engine operating temperature. |  |  |  |  |  |  |  |
| 7. Remove and replace spark plugs; inspect secondary ignition components for wear and damage. |  |  |  |  |  |  |  |
| **EP-B. Computerized Controls** |  |  |  |  |  |  |  |
| 1. Retrieve and record diagnostic trouble codes (DTC), OBD monitor status, and freeze frame data; clear codes when applicable. |  |  |  |  |  |  |  |
| 2. Describe the use of the OBD monitors for repair verification. |  |  |  |  |  |  |  |
| **EP-C. Fuel, Air Induction, and Exhaust Systems** |  |  |  |  |  |  |  |
| 1. Replace fuel filter(s) where applicable. |  |  |  |  |  |  |  |
| 2. Inspect, service, or replace air filters, filter housings, and intake duct work. |  |  |  |  |  |  |  |
| 3. Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields; determine necessary action. |  |  |  |  |  |  |  |
| 4. Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; determine necessary action. |  |  |  |  |  |  |  |
| 5. Check and refill diesel exhaust fluid (DEF). |  |  |  |  |  |  |  |
| **EP-D. Emissions Control Systems** |  |  |  |  |  |  |  |
| 1. Inspect, test, and service positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; perform necessary action. |   |  |  |  |  |  |  |

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| **IX. SUPPLEMENTAL TASKS** |  |  |  |  |  |  |  |
| **GT-A. Shop and Personal Safety** |  |  |  |  |  |  |  |
| 1. Identify general shop safety rules and procedures. |  |  |  |  |  |  |  |
| 2. Utilize safe procedures for handling of tools and equipment. |  |  |  |  |  |  |  |
| 3. Identify and use proper placement of floor jacks and jack stands. |  |  |  |  |  |  |  |
| 4. Identify and use proper procedures for safe lift operation. |  |  |  |  |  |  |  |
| 5. Utilize proper ventilation procedures for working within the lab/shop area. |  |  |  |  |  |  |  |
| 6. Identify marked safety areas. |  |  |  |  |  |  |  |
| 7. Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment. |  |  |  |  |  |  |  |
| 8. Identify the location and use of eye wash stations. |  |  |  |  |  |  |  |
| 9. Identify the location of the posted evacuation routes. |  |  |  |  |  |  |  |
| 10. Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities. |  |  |  |  |  |  |  |
| 11. Identify and wear appropriate clothing for lab/shop activities. |  |  |  |  |  |  |  |
| 12. Secure hair and jewelry for lab/shop activities. |  |  |  |  |  |  |  |
| 13. Demonstrate awareness of the safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits. |  |  |  |  |  |  |  |
| 14. Demonstrate awareness of the safety aspects of high voltage circuits (such as high intensity discharge (HID) lamps, ignition systems, injection systems, etc.). |  |  |  |  |  |  |  |
| 15. Locate and demonstrate knowledge of material safety data sheets (MSDS). |  |  |  |  |  |  |  |

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| **GT-B. Tools and Equipment** |  |  |  |  |  |  |  |
| 1. Identify tools and their usage in automotive applications.  |  |  |  |  |  |  |  |
| 2. Identify standard and metric designation. |  |  |  |  |  |  |  |
| 3. Demonstrate safe handling and use of appropriate tools. |  |  |  |  |  |  |  |
| 4. Demonstrate proper cleaning, storage, and maintenance of tools and equipment. |  |  |  |  |  |  |  |
| 5. Demonstrate proper use of precision measuring tools (i.e. micrometer, dial-indicator,  Dial-caliper). |  |  |  |  |  |  |  |
| **GT-C. Preparing Vehicle for Service** |  |  |  |  |  |  |  |
| 1. Identify information needed and the service requested on a repair order. |  |  |  |  |  |  |  |
| 2. Identify purpose and demonstrate proper use of fender covers, mats. |  |  |  |  |  |  |  |
| 3. Demonstrate use of the three C’s (concern, cause, and correction). |  |  |  |  |  |  |  |
| 4. Review vehicle service history. |  |  |  |  |  |  |  |
| 5. Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. |  |  |  |  |  |  |  |
| **GT-D. Preparing Vehicle for Customer** |  |  |  |  |  |  |  |
| 1. Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover, etc.).  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Student Internship Program (SIP)** |  |  |  |  |  |  |  |
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Revised 4/2021