

Automotive Technology Program Standards Criticality Survey 2018

CONTENT STANDARD 1.0: IDENTIFY AND UTILIZE SAFETY PROCEDURES AND PROPER TOOLS					
Performance Standard 1.1: Demonstrate General Lab Safety Rules and Procedures					
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average	
1.1.1	Identify general shop safety rules and procedures.	1	9	11	2.48
1.1.2	Utilize safe procedures for handling of tools and equipment.	0	11	10	2.48
1.1.3	Identify and use proper placement of floor jacks and jack standards.	0	7	14	2.67
1.1.4	Identify and use proper procedures for safe vehicle lift operation.	0	7	14	2.67
1.1.5	Utilize proper ventilation procedures for working within the lab/shop area.	2	11	8	2.29
1.1.6	Identify marked safety areas.	4	13	4	2.00
1.1.7	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 safety equipment.	6	8	7	2.05
1.1.8	Identify the location and use of eye wash stations.	3	10	8	2.24
1.1.9	Identify the location of the posted evacuation routes.	4	13	4	2.00
1.1.10	Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities.	2	8	10	2.40
1.1.11	Identify and wear appropriate clothing for lab/shop activities.	3	11	6	2.15
1.1.12	Secure hair and jewelry for lab/shop activities.	2	10	8	2.30
1.1.13	Identify safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits.	4	5	11	2.35
1.1.14	Identify safety aspects of high voltage circuits (e.g., high intensity discharge (HID) lamps, ignition systems, injection systems).	3	4	13	2.50
1.1.15	Locate and interpret safety data sheets (SDS).	6	9	4	1.89

1.1.16	Handle, store, and dispose of hazardous waste and materials.	3	8	9	2.30
				Answered	21
				Skipped	7

Performance Standard 1.2: Identify and Utilize Proper Tools					
	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
1.2.1	Identify tools and their use in automotive applications.	1	14	6	2.24
1.2.2	Identify standard and metric designations and fasteners.	4	11	6	2.10
1.2.3	Demonstrate safe handling and use of appropriate tools.	1	13	7	2.29
1.2.4	Demonstrate proper cleaning, storage, and maintenance of tools and equipment.	4	14	3	1.95
1.2.5	Demonstrate proper use of precision measuring tools (e.g., micrometer, dial-indicate, dial-caliper).	5	8	8	2.14
				Answered	21
				Skipped	7

CONTENT STANDARD 2.0: PERFORM BASIC VEHICLE SERVICE					
Performance Standard 2.1: Identify and Utilize Vehicle Service Information					
	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
2.1.1	Locate and utilize paper and/or electronic service information.	2	11	8	2.29
2.1.2	Locate and utilize Technical Service Bulletins (TSBs).	3	12	6	2.14
2.1.3	Demonstrate knowledge of special service messages, quotes, service campaigns/recalls, vehicle/service warranty applications, and service interval recommendations.	4	14	3	1.95
2.1.4	Locate Vehicle Identification Number (VIN) and production data code.	1	13	7	2.29
2.1.5	Analyze VIN information.	6	11	3	1.85
2.1.6	Identify other vehicle information labels (e.g., tire, emissions).	5	13	3	1.90
				Answered	21
				Skipped	7

Performance Standard 2.2: Prepare a Vehicle for the Customer				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
2.2.1 Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover, and so forth).	1	13	7	2.29
Answered				21
Skipped				7

CONTENT STANDARD 3.0: APPLY CONCEPTS OF ENGINE REPAIR (A1)				
Performance Standard 3.1: Demonstrate General Engine Service Techniques				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
3.1.1 Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins.	2	11	6	2.21
3.1.2 Verify operation of the instrument panel engine warning indicators.	3	11	5	2.11
3.1.3 Inspect engine assembly for fuel, oil, coolant, and other leaks.	1	9	9	2.42
3.1.4 Determine necessary action to remedy issues related to fuel, oil, coolant, and other leaks.	3	9	7	2.21
3.1.5 Install engine covers using gaskets, seals, and sealers as required.	3	10	6	2.16
3.1.6 Demonstrate knowledge of timing belt removal and replacement.	4	7	8	2.21
3.1.7 Verify engine mechanical timing.	4	9	6	2.11
3.1.8 Perform common fastener and thread repair to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert.	6	9	4	1.89
3.1.9 Identify service precautions related to service of the internal combustion engine of a hybrid vehicle.	6	7	6	2.00
Answered				19
Skipped				9

Performance Standard 3.2: Perform Cylinder Head and Valve Train Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
3.2.1 Demonstrate knowledge of valve adjustment (mechanic and hydraulic lifters).	9	7	2	1.61
3.2.2 Identify components of the cylinder head and valve train.	4	11	4	2.00
Answered				19
Skipped				9

Performance Standard 3.3: Perform Lubrication and Cooling Systems Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
3.3.1 Perform cooling system pressure and dye tests to identify leaks.	6	11	2	1.79
3.3.2 Check coolant condition and level.	2	13	4	2.11
3.3.3 Inspect and test radiator, pressure cap, coolant recovery tank, heater core, and galley plug.	5	10	4	1.95
3.3.4 Determine necessary action to remedy issues related to radiator, pressure cap, coolant recovery tank, heater core, and galley plug.	5	11	3	1.89
3.3.5 Inspect, replace, and adjust drive belts, tensioners, and pulleys.	5	9	5	2.00
3.3.6 Check pulley and belt alignment.	3	11	5	2.11
3.3.7 Remove, inspect, and replace thermostat and gasket/seal.	3	13	3	2.00
3.3.8 Inspect and test coolant.	2	14	3	2.05
3.3.9 Drain and recover coolant.	4	12	3	1.95
3.3.10 Flush and refill cooling system with recommended coolant.	3	13	3	2.00
3.3.11 Bleed air as required.	2	12	5	2.16
3.3.12 Perform oil and filter change.	2	11	6	2.21
3.3.13 Identify components of the lubrication and cooling systems.	2	12	5	2.16
Answered				19
Skipped				9

CONTENT STANDARD 4.0: ANALYZE AUTOMATIC TRANSMISSION/TRANSAXLE FOR SERVICE (A2)

Performance Standard 4.1: Perform General Transmission/Transaxle Service

Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
4.1.1 Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins.	2	9	8	2.32
4.1.2 Check fluid level in a transmission, or a transaxle equipped with a dip-stick.	3	9	7	2.21
4.1.3 Check fluid level in a transmission, or a transaxle not equipped with a dip-stick.	4	8	7	2.16
4.1.4 Check transmission fluid condition.	2	12	5	2.16
4.1.5 Check for transmission fluid leaks.	1	13	4	2.17
4.1.6 Identify drive train components and configuration.	3	9	7	2.21
Answered				19
Skipped				9

Performance Standard 4.2: Perform In-Vehicle Transmission/Transaxle Service and Repair

Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
4.2.1 Inspect, adjust, and replace external manual valve shift linkage, transmission range sensor/switch, and park/neutral position switch.	6	10	3	1.84
4.2.2 Inspect for leakage at external seals, gaskets, and bushings.	3	11	5	2.11
4.2.3 Inspect, replace, or align powertrain mounts.	7	10	2	1.74
4.2.4 Drain and replace fluid and filter(s).	2	13	4	2.11
4.2.5 Describe the operational characteristics of a continuously variable transmission (CVT).	9	9	1	1.58
4.2.6 Describe the operational characteristics of a hybrid vehicle drive train.	8	10	1	1.63
Answered				19
Skipped				9

CONTENT STANDARD 5.0: ANALYZE MANUAL DRIVE TRAIN AND AXELS FOR SERVICE (A3)

Performance Standard 5.1: Perform General Drive Train Service

Answer Choices		Nice to Know	Need to Know	Critical to Know	Rating Average
5.1.1	Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins.	1	11	6	2.28
5.1.2	Drain and refill manual transmission/transaxle and final drive unit.	3	11	4	2.06
5.1.3	Check fluid condition; check for leaks.	1	12	5	2.22
5.1.4	Identify manual drive train and axle components and configuration.	2	11	5	2.17
				Answered	18
				Skipped	10

Performance Standard 5.2: Investigate Clutch Systems for Service and Repair

Answer Choices		Nice to Know	Need to Know	Critical to Know	Rating Average
5.2.1	Check and adjust clutch master cylinder fluid level.	3	13	2	1.94
5.2.2	Check for hydraulic system leaks.	2	12	3	2.06
5.2.3	Describe basic operation of a manual clutch system.	4	12	2	1.89
5.2.4	Describe the operational characteristics of an electronically controlled manual transmission/transaxle.	5	11	2	1.83
				Answered	18
				Skipped	10

Performance Standard 5.3: Perform Drive Shaft and Half Shaft, Universal and Constant Velocity (CV) Joint Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
5.3.1 Inspect, remove and/or replace bearings, hubs, and seals.	2	12	3	2.06
5.3.2 Diagnose, inspect, service, and replace shafts, yokes, boots, and universal/CV joints.	2	13	3	2.06
5.3.3 Check for leads at drive assembly and transfer case seals; check vents; check fluid level.	1	14	3	2.11
5.3.4 Identify proper fluid type per manufacturer specification.	1	10	7	2.33
Answered				18
Skipped				10

Performance Standard 5.4: Assess Differential Case Assembly for Service				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
5.4.1 Demonstrate knowledge of differential operation.	2	12	4	2.11
5.4.2 Clean and inspect differential housing; check for leaks; inspect housing vent.	3	13	2	1.94
5.4.3 Check and adjust differential housing fluid level.	2	14	2	2.00
5.4.4 Drain and fill differential housing.	4	12	2	1.89
Answered				18
Skipped				10

Performance Standard 5.5: Perform Drive Axle Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
5.5.1 Inspect and replace drive axle wheel studs.	4	11	3	1.94
5.5.2 Inspect front-wheel bearings and locking hubs.	3	10	5	2.11
Answered				18
Skipped				10

CONTENT STANDARD 6.0: PERFORM SUSPENSION AND STEERING SERVICE AND REPAIR (A4)

Performance Standard 6.1: Prepare Vehicle for General Suspension and Steering Systems Service

	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
6.1.1	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins.	3	10	4	2.06
6.1.2	Disable and enable supplemental restraint system (SRS).	6	8	3	1.82
6.1.3	Identify suspension and steering system components and configurations.	3	10	4	2.06
Answered					17
Skipped					11

Performance Standard 6.2: Perform Steering Systems Service and Repair

	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
6.2.1	Demonstrate knowledge of various power steering systems.	3	12	2	1.94
6.2.2	Identify and inspect various steering system components.	3	11	3	2.00
6.2.3	Demonstrate knowledge of various suspension systems.	3	12	2	1.94
6.2.4	Identify and inspect various suspension system components.	3	11	3	2.00
6.2.5	Inspect electric power-assisted steering.	4	10	3	1.94
6.2.6	Identify electronically controlled suspension systems and safety precautions.	5	9	3	1.88
6.2.7	Identify hybrid vehicle power steering system electrical circuits and safety precautions.	6	7	4	1.88
6.2.8	Describe the function of suspension and steering control systems and components (e.g., active suspension and stability control).	3	10	3	2.00
Answered					17
Skipped					11

Performance Standard 6.3: Investigate Wheel Alignment Conditions				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
6.3.1 Demonstrate knowledge of alignment angles, including camber, caster, and toe.	3	10	4	2.06
6.3.2 Perform pre-alignment inspection and measure vehicle's ride height.	4	9	4	2.00
Answered				17
Skipped				11

Performance Standard 6.4: Perform Wheel and Tire Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
6.4.1 Inspect tire condition; identify tire wear patterns; check for correct size and application (load and speed ratings) and adjust air pressure.	2	10	5	2.18
6.4.2 Determine necessary action to remedy issues related to tire condition.	3	10	4	2.06
6.4.3 Rotate tires according to manufacturer's recommendations.	2	12	3	2.06
6.4.4 Dismount, inspect, and remount tire on wheel.	3	10	4	2.06
6.4.5 Balance wheel and tire assembly.	2	11	4	2.12
6.4.6 Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor.	2	12	3	2.06
6.4.7 Inspect tire and wheel assembly for air loss.	2	12	3	2.06
6.4.8 Determine necessary action to remedy tire air loss.	2	12	3	2.06
6.4.9 Repair tire according to manufacturer approved procedure.	3	12	2	1.94
6.4.10 Identify and calibrate Tire Pressure Monitoring System (TPMS).	4	8	5	2.06
6.4.11 Remove and replace TPMS sensors including relearn procedure.	4	8	5	2.06
Answered				17
Skipped				11

Performance Standard 6.5: Related Suspension and Steering Service				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
6.5.1 Inspect rack and pinon steering gear inner tie rod ends (sockets) and bellows boots.	2	13	2	2.00
6.5.2 Inspect power steering fluid level and condition.	3	12	2	1.94
6.5.3 Flush, fill, and bleed power steering system.	4	11	2	1.88
6.5.4 Identify proper fluid type per manufacturer specification.	2	11	4	2.12
6.5.5 Inspect for power steering fluid leakage.	3	13	1	1.88
6.5.6 Remove, inspect, replace, and/or adjust power steering pump drive belt.	3	13	1	1.88
6.5.7 Inspect and replace power steering hoses and fittings.	4	12	1	1.82
6.5.8 Inspect pitman arm, relay (center link/intermediate) rod, idler arm, mountings, and steering linkage damper.	3	10	4	2.06
6.5.9 Inspect tie rod ends (sockets), tie rod sleeves, and clamps.	2	12	3	2.06
6.5.10 Inspect upper and lower control arms, bushings, and shafts.	4	9	4	2.00
6.5.11 Inspect and replace rebound bumpers.	4	12	1	1.82
6.5.12 Inspect track bar, strut rods/radius arms, and related mounts and bushings.	4	10	3	1.94
6.5.13 Inspect upper and lower ball joints (with or without wear indicators).	3	10	4	2.06
6.5.14 Inspect suspension system coil springs and spring insulators (silencers).	3	13	1	1.88
6.5.15 Inspect suspension system torsion bars and mounts.	3	13	1	1.88
6.5.16 Inspect and/or replace front/rear stabilizer bar (sway bar) bushings, brackets, and links.	4	12	1	1.82
6.5.17 Inspect, remove, and/or replace strut cartridge or assembly; inspect mounts and bushings.	3	13	1	1.88
6.5.18 Inspect front strut bearing and mount.	3	12	2	1.94
6.5.19 Inspect rear suspension system lateral links/arms (track bars), control (trailing) arms.	4	11	2	1.88
6.5.20 Inspect rear suspension system, leaf spring(s), spring insulators (silencers), shackles, brackets, bushings, center pins/bolts, and mounts.	4	12	1	1.82

6.5.21	Inspect, remove, and/or replace shock absorbers.	4	11	2	1.88
6.5.22	Inspect mounts and bushings.	2	14	1	1.94
				Answered	17
				Skipped	11

CONTENT STANDARD 7.0: ANALYZE BRAKE SYSTEMS FOR SERVICE AND REPAIR (A5)

Performance Standard 7.1: Demonstrate Knowledge of General Brake Systems

Answer Choices		Nice to Know	Need to Know	Critical to Know	Rating Average
7.1.1	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins.	2	10	5	2.18
7.1.2	Describe procedure for performing a road test to check brake system operation, including the anti-lock brake system (ABS).	3	11	3	2.00
7.1.3	Demonstrate knowledge of basic hydraulic principles.	2	12	3	2.06
7.1.4	Identify brake system components and configuration.	1	12	4	2.18
				Answered	17
				Skipped	11

Performance Standard 7.2: Perform Hydraulic System Service and Repair

Answer Choices		Nice to Know	Need to Know	Critical to Know	Rating Average
7.2.1	Measure brake pedal height, travel, and feel.	5	11	1	1.76
7.2.2	Check master cylinder for internal/external leaks and proper operation.	2	13	2	2.00
7.2.3	Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks bulging, wear, loose fittings, and support.	1	13	3	2.12
7.2.4	Select, handle, store, and fill brake fluids to proper level.	1	15	1	2.00
7.2.5	Identify components of brake warning light system.	1	13	3	2.12
7.2.6	Bleed and/or flush brake system.	2	11	4	2.12
7.2.7	Test brake fluid for contamination.	3	11	3	2.00
				Answered	17
				Skipped	11

Performance Standard 7.3: Perform Drum Brake Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
7.3.1 Remove, clean, inspect, and measure brake drum diameter; determine serviceability.	3	12	2	1.94
7.3.2 Refinish brake drum and measure final drum diameter; compare with specifications.	3	12	2	1.94
7.3.3 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.	2	10	5	2.18
7.3.4 Inspect wheel cylinders for leaks and proper operation; remove and replace as needed.	2	12	3	2.06
7.3.5 Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; make final checks and adjustments.	3	12	2	1.94
7.3.6 Install wheel and torque lug nuts to proper specifications.	1	6	9	2.50
Answered				17
Skipped				11

Performance Standard 7.4: Perform Disc Brake Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
7.4.1 Remove and clean caliper assembly; inspect for leaks and damage/wear to caliper housing.	2	11	4	2.12
7.4.2 Determine necessary action to remedy issues with caliper assembly.	3	11	3	2.00
7.4.3 Inspect caliper mounting and slides/pins for proper operation wear, and damage.	2	10	5	2.18
7.4.4 Determine necessary action to remedy issues with caliper mounting.	3	10	4	2.06
7.4.5 Remove, inspect, and replace brake pads and retaining hardware.	2	11	4	2.12
7.4.6 Determine necessary action to remedy issues with brake pads and retaining hardware.	3	8	6	2.18
7.4.7 Lubricate and reinstall caliper, brake pads, and related hardware.	1	12	4	2.18
7.4.8 Seat pads and inspect for leaks.	2	11	4	2.12
7.4.9 Clean and inspect rotor and mounting surface, measure rotor thickness, thickness variation, and lateral run out.	2	11	4	2.12
7.4.10 Determine necessary action to remedy issues with rotor.	3	11	3	2.00
7.4.11 Remove and reinstall rotor.	2	12	3	2.06
7.4.12 Refinish rotor on vehicle; measure final rotor thickness and compare with specifications.	3	11	3	2.00
7.4.13 Refinish rotor off vehicle; measure final rotor thickness and compare with specifications.	4	10	3	1.94
7.4.14 Retract and readjust caliper piston on an integral parking brake system.	3	10	4	2.06
7.4.15 Check brake pad wear indicator.	1	12	4	2.18
7.4.16 Determine necessary action to remedy brake pad wear.	2	11	4	2.12
7.4.17 Describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer's recommendations.	2	11	4	2.12
Answered				17
Skipped				11

Performance Standard 7.5: Analyze Power Assist Units				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
7.5.1 Check brake pedal free-travel with, and without, engine running to verify proper power booster operation.	5	9	3	1.88
7.5.2 Check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster.	4	11	2	1.88
7.5.3 Identify components of the brake power-assist system (vacuum and hydraulic).	2	12	3	2.06
Answered				17
Skipped				11

Performance Standard 7.6: Perform Miscellaneous Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
7.6.1 Remove, clean, inspect, repack, and install wheel bearings, replace seals; install hub and adjust bearings.	2	11	4	2.12
7.6.2 Check parking brake cables and components for wear, binding, and corrosion; clean, lubricate, adjust and/or replace as needed.	3	12	2	1.94
7.6.3 Check parking brake operation and parking brake indicator light system operation.	3	11	3	2.00
7.6.4 Determine necessary action to remedy issues related to parking brake and parking brake indicator light system.	3	12	2	1.94
7.6.5 Check operation of brake stop light system.	2	12	3	2.06
7.6.6 Replace wheel bearing and race.	3	12	2	1.94
7.6.7 Inspect and replace wheel studs .	3	12	2	1.94
7.6.8 Identify traction control/vehicle stability control-system components.	3	10	4	2.06
7.6.9 Describe the operation of a regenerative braking system.	6	8	3	1.82
Answered				17
Skipped				11

CONTENT STANDARD 8.0: ANALYZE ELECTRICAL/ELECTRONIC SYSTEM (A6)				
Performance Standard 8.1: Perform General Electronic Systems Service				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
8.1.1 Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins.	1	6	10	2.53
8.1.2 Demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law).	1	10	6	2.29
8.1.3 Use and interpret wiring diagrams to trace electrical/electronic circuits.	1	9	7	2.35
8.1.4 Demonstrate proper use of digital multi-meter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance.	1	9	7	2.35
8.1.5 Research the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits.	1	11	5	2.24
8.1.6 Check operations of electrical circuits with a test light.	2	10	5	2.18
8.1.7 Check operation of electrical circuits using fused jumper wires.	3	10	4	2.06
8.1.8 Measure key-off battery drain (parasitic draw).	1	12	4	2.18
8.1.9 Inspect and test fusible links, circuit breakers, and fuses.	0	12	5	2.29
8.1.10 Determine necessary action to remedy issues related to fusible links, circuit breakers, and fuses.	3	7	6	2.19
8.1.11 Perform solder repair of electrical wiring.	2	10	4	2.13
8.1.12 Replace electrical connectors and terminal ends.	2	9	5	2.19
8.1.13 Identify electrical/electronic system components and configuration.	1	10	6	2.29
Answered				17
Skipped				11

Performance Standard 8.2: Perform Battery Service				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
8.2.1 Perform battery state of charge test.	0	11	6	2.35
8.2.2 Confirm proper battery capacity for vehicle application; perform battery capacity and load test.	1	11	5	2.24
8.2.3 Determine necessary action to remedy issues related to the battery.	2	13	2	2.00
8.2.4 Maintain or restore electronic memory.	3	11	3	2.00
8.2.5 Inspect and lean battery; fill battery cells, check battery cables, connectors, clamps, and hold-downs.	3	11	3	2.00
8.2.6 Perform slow/fast battery charge according to manufacturer recommendations.	4	10	3	1.94
8.2.7 Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply.	3	9	5	2.12
8.2.8 Identify safety precautions for high voltage systems on electric, hybrid-electric, and diesel vehicles.	2	9	6	2.24
8.2.9 Identify electronic modules, security systems, radios, and other accessories that require re-initialization or code entry after reconnecting vehicle battery.	1	12	4	2.18
8.2.10 Identify hybrid vehicle auxiliary (12 volt) battery service, repair, and test procedures.	3	10	4	2.06
Answered				17
Skipped				11

Performance Standard 8.3: Perform Starting System Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
8.3.1 Perform starter current draw test.	4	10	3	1.94
8.3.2 Determine necessary action to remedy issues related to starter current draw.	4	10	3	1.94
8.3.3 Perform starter circuit-voltage drop tests.	4	8	5	2.06
8.3.4 Determine necessary action to remedy issues related to the starter circuit.	3	11	3	2.00
8.3.5 Inspect and test starter relays and solenoid.	3	12	2	1.94
8.3.6 Determine necessary action to remedy issues related to starter relays and solenoid.	2	11	4	2.12
8.3.7 Remove and install starter in a vehicle.	3	12	2	1.94
8.3.8 Inspect and test switches, connectors, and wires of starter control circuits.	1	14	2	2.06
8.3.9 Determine necessary action to remedy issues related to the starter control circuits.	3	12	2	1.94
8.3.10 Demonstrate knowledge of an automatic idle-start/stop system.	4	9	4	2.00
Answered				17
Skipped				11

Performance Standard 8.4: Perform Charging System Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
8.4.1 Perform charging system output test.	1	11	5	2.24
8.4.2 Determine necessary action to remedy issues related to the charging system.	2	10	5	2.18
8.4.3 Inspect, adjust, or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment.	1	13	3	2.12
8.4.4 Remove, inspect and reinstall generator (alternator).	2	12	3	2.06
8.4.5 Perform charging circuit voltage drop tests.	4	9	4	2.00
8.4.6 Determine necessary action to remedy issues related to the charging circuit.	2	12	3	2.06
Answered				17
Skipped				11

Performance Standard 8.5: Perform Lighting Systems Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
8.5.1 Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed.	4	10	3	1.94
8.5.2 Aim headlights.	6	11	0	1.65
8.5.3 Identify system voltage and safety precautions associated with high intensity discharge headlights.	5	7	5	2.00
Answered				17
Skipped				11

Performance Standard 8.6: Perform Accessories Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
8.6.1 Disable and enable the supplemental restraint system (SRS) for vehicle service; verify indicator lamp operation.	5	7	5	2.00
8.6.2 Remove and reinstall door panel.	6	9	2	1.76
8.6.3 Describe the operation of keyless entry/remote-start system.	6	9	2	1.76
8.6.4 Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators.	2	10	5	2.18
8.6.5 Verify windshield wiper and washer operation; replace wiper blades.	4	11	2	1.88
Answered				17
Skipped				11

CONTENT STANDARD 9.0: ANALYZE HEATING AND AIR CONDITIONING SYSTEMS (A7)				
Performance Standard 9.1: Demonstrate Knowledge of A/C Systems				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
9.1.1 Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins.	2	8	7	2.29
9.1.2 Identify heating, ventilation, and air conditioning (HVAC) components and configurations.	2	11	4	2.12
Answered				17
Skipped				11

Performance Standard 9.2: Inspect Refrigeration System Components				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
9.2.1 Inspect and replace air conditioning (A/C) compressor drive belts, pulleys, and tensioners; visually inspect A/C components for signs of leaks.	1	14	2	2.06
9.2.2 Determine necessary action to remedy issues related to the A/C compressor drive belts, pulleys, and tensioners.	2	12	3	2.06
9.2.3 Research hybrid vehicle A/C system electrical circuits and the service/safety precautions.	4	9	4	2.00
9.2.4 Inspect A/C condenser for airflow restrictions.	3	12	2	1.94
9.2.5 Determine necessary action to remedy issues related to the A/C condenser.	4	11	2	1.88
Answered				17
Skipped				11

Performance Standard 9.3: Inspect Heating, Ventilation, and Engine Cooling Systems				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
9.3.1 Inspect engine cooling and heater system hoses and pipes; perform necessary action.	1	11	5	2.24
Answered				17
Skipped				11

Performance Standard 9.4: Inspect Operating Systems and Related Controls				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
9.4.1 Inspect A/C heater ducts, doors, hoses, cabin filters, and outlets.	2	13	2	2.00
9.4.2 Determine necessary action to remedy issues related to the A/C heater ducts, doors, hoses, cabin filters, and outlets.	4	10	3	1.94
9.4.3 Identify the source of A/C system odors.	6	10	1	1.71
Answered				17
Skipped				11

CONTENT STANDARD 10.0: ANALYZE ENGINE PERFORMANCE (A8)				
Performance Standard 10.1: Perform General Engine Service				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
10.1.1 Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins.	1	9	7	2.35
10.1.2 Perform engine absolute manifold pressure tests (vacuum/boost); document results.	3	13	1	1.88
10.1.3 Perform cylinder power-balance test; document results.	4	11	2	1.88
10.1.4 Perform cylinder cranking and running compressions tests.	2	12	3	2.06
10.1.5 Determine necessary action to remedy issues related to cylinder unit and components.	2	14	1	1.94
10.1.6 Perform cylinder leakage test; document results.	5	10	2	1.82
10.1.7 Verify engine-operating temperature.	1	12	4	2.18
10.1.8 Remove and replace spark plugs; inspect secondary ignition components for wear and damage.	2	10	5	2.18
Answered				17
Skipped				11

Performance Standard 10.2: Analyze Computerized Engine Controls				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
10.2.1 Retrieve and record diagnostic trouble codes, On Board Diagnostic (OBD) monitor status, and freeze frame data; clear codes when applicable.	1	8	8	2.41
10.2.2 Describe the importance of operating all OBD monitors for repair verification.	1	10	6	2.29
Answered				17
Skipped				11

Performance Standard 10.3: Perform Fuel, Air Induction, and Exhaust Systems Service/Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
10.3.1 Replace fuel filter(s) where applicable.	2	10	4	2.13
10.3.2 Inspect, service, or replace air filters, filter housing, and intake duct-work.	1	13	3	2.12
10.3.3 Inspect the integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields.	1	12	4	2.18
10.3.4 Determine necessary action to remedy issues related to the exhaust system and exhaust system components.	2	13	2	2.00
10.3.5 Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; repair or replace as needed.	3	12	2	1.94
10.3.6 Check and fill hangers exhaust fluid (DEF).	3	11	3	2
Answered				17
Skipped				11

Performance Standard 10.4: Perform Emissions Control Systems Service and Repair				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
10.4.1 Inspect, test, and service positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; perform necessary action.	2	13	2	2.00
Answered				17
Skipped				11