
SCHOOL

Inspection Date

Level III

Student

Outcomes

Automotive Technician Training Standards

Level III

1 – ENGINE REPAIR STUDENT OUTCOMES LIST

School

Note: All procedures listed in this document are to be performed in accordance with industry-accepted practices and/or manufacturers' recommended procedures.

NOTE: No Evidence = 0, Some Evidence = 1, Meets Standards = 2

SCORE			I.D.
0	1	2	NO.

				ENGINE CONSTRUCTION AND DESIGN
			31.1	Explain the principles of an internal combustion engine.
			31.2	Identify companion cylinders.
			31.3	Identify various engine classifications.
			31.4	Perform basic engine I. D
				ENGINE TESTING
			31.5	Identify and locate source of fluid leaks.
			31.6	Inspect an engine for excessive oil usage
			31.7	Perform and analyze vacuum gauge test for engine condition.

			31.8	Perform and analyze a cylinder balance test.
			31.9	Perform and analyze cylinder leakage test.
			31.10	Perform and analyze a compression test.
			31.11	Identify abnormal engine noises.
			31.12	Verify cam timing.
			31.13	Inspect hoses and belts.
			31.14	Identify causes of contaminated oil.
				ENGINE MAINTENANCE
			31.15	Change oil and oil filter.
			31.16	Perform valve adjustment.
			31.17	Inspect valve timing components.
			31.18	Test coolant level and condition.
			31.19	Label all mechanical vacuum and electrical connections before removing component.
			31.20	Verify correct assembly.
			31.21	Check oil pressure with a mechanical oil pressure gauge.
				HEAD AND VALVE TRAIN
			31.22	Inspect and measure a cylinder head for warpage, damage or failures.
			31.23	Inspect valve train parts for wear, damage or failures.
			31.24	Inspect cam and related parts for wear, damage or failures.
			31.25	Inspect heads for cracks, broken bolts and damaged threads.
			31.26	Measure valve stem tip height.

			31.27	Measure valve guide wear and clearance.
			31.28	Measure spring installed height.
			31.29	Clean plastic, aluminum, iron or steel parts.
			31.30	Replace valve guide seals on and off the engine.
			31.31	Grind a valve face.
			31.32	Assemble head (OHC and OHV).
			31.33	Remove and replace cam (OHV, OHC).
			31.34	Remove and replace cam drive and align timing marks.
			31.35	Remove and replace timing belt and align timing marks (OHC).
			31.36	Adjust valves (pushrod, OHC, shim type).
				SHORT BLOCK
			31.37	Inspect and measure a cylinder block for wear, damage, or failure.
			31.38	Inspect and measure a crankshaft for wear, damage, or failure.
			31.39	Inspect a bearing for wear, damage, or failure.
			31.40	Inspect and measure a piston for wear, damage, or failure.
			31.41	Inspect a flywheel and clutch assembly for wear, damage, or failure.
			31.42	Mark connecting rods and main bearing caps.
			31.43	Remove ring ridge.
			31.44	Deglaze cylinders.
			31.45	Remove and replace pressed fit harmonic balancer.
			31.46	Measure and adjust ring end gap.
			31.47	Install piston rings.
			31.48	Remove and replace galley and expansion plugs.

			31.49	Remove and replace pilot bearing.
			31.50	Install crankshaft and check main bearing clearances and end play.
			31.51	Install rear main bearing seal.
			31.52	Install piston/rod assemblies and check connecting rod bearing clearances and side clearances.
			31.53	Use manufacturer recommended sealer as required.
			31.54	Inspect oil pump and pressure relief valve.
				FINAL ASSEMBLY AND START-UP
			31.55	Install front crankshaft seal.
			31.56	Install heads and torque head bolts to manufacturer recommended spec.
			31.57	Prime lubrication system.
			31.58	Check accuracy of timing tab and balancer timing marks.
			31.59	Adjust mechanical and hydraulic valves (pushrod, OHC, shim types).
			31.60	Install distributor and set static timing.
			31.61	Install manufacturers recommended coolant and test strength.
			31.62	Install and adjust accessory belts.
			31.63	Replace thermostat
			31.64	Pressure check cooling system and cap.
			31.65	Check temperature gauge.
				MISCELLANEOUS
			31.66	Remove broken bolt or stud.

			31.67	Install a thread insert.
			31.68	Use electronic repair data base for retrieval of repair procedures, maintenance specifications and technical service bulletins.

SCORING TOTALS

Total 0's = _____ Total 1's = _____ Total 2's = _____

Multiply the 1's X 1 = _____ 2's X 2 = _____

Add the results to determine the TOTAL SCORE _____

Automotive Technician Training Standards

Level III

2 – BRAKES STUDENT OUTCOMES LIST

School

Note: All procedures listed in this document are to be performed in accordance with industry-accepted practices and/or manufacturers' recommended procedures.

NOTE: No Evidence = 0, Some Evidence = 1, Meets Standards = 2

SCORE			I.D.
0	1	2	NO.

				HYDRAULIC SYSTEM
			32.1	Check and correct brake fluid level and condition.
			32.2	Change brake fluid.
			32.3	Select, handle, store and install brake fluids.
			32.4	Check brake pedal feel and travel.
			32.5	Inspect stop light operation.
			32.6	Inspect master cylinder for internal and external leaks.
			32.7	Remove and replace master cylinder.
			32.8	Bench bleed master cylinder.
			32.9	Inspect brake tubing, flexible hoses, fittings and supports.

			32.10	Remove and replace brake lines, hoses, fittings and supports.
			32.11	Adjust height sensing-type proportioning valve.
			32.12	Bleed (manual, pressure, vacuum, or surge) hydraulic system.
				DRUM BRAKES
			32.13	Remove, inspect, replace and measure brake drums.
			32.14	Inspect linings for wear and condition, measure thickness.
			32.15	Resurface brake drum.
			32.16	Remove, inspect and replace brake shoes/linings, self-adjusters and other hardware.
			32.17	Inspect, clean and lubricate backing (support) plates.
			32.18	Remove, inspect and replace backing plate.
			32.19	Remove, inspect and replace wheel cylinders.
			32.20	Determine correct brake shoe/lining positioning.
			32.21	Pre-adjust brake shoes to drum.
			32.22	Inspect and service wheel bearings and seals.
			32.23	Remove and replace bearing race.
			32.24	Remove and replace wheel; replace lug nuts using proper torque and tightening sequence.
				DISC BRAKES
			32.25	Remove, inspect and replace caliper; clean and inspect for leaks and damage to caliper housing.
			32.26	Inspect and lubricate caliper mountings.
			32.27	Remove, inspect and replace pads.
			32.28	Inspect linings for wear and condition.

			32.29	Determine correct brake pad/lining positioning.
			32.30	Disassemble and clean caliper assembly (both front and rear types); replace seals and boots.
			32.31	Clean, inspect, measure rotor runout and thickness.
			32.32	Resurface rotor.
			32.33	Remove and replace wheel; replace lug nuts using proper torque and tightening sequence.
				PARKING BRAKES AND WARNING LIGHTS
			32.34	Check parking brake operation.
			32.35	Adjust parking brake.
			32.36	Test parking brake indicator light.
			32.37	Remove, inspect and replace, and test brake warning light system switch.
			32.38	Test, adjust, repair or replace stop light switch.
				BRAKE POWER ASSIST
			32.39	Test for power booster operation and free travel.
			32.40	Check for power booster reserve.
			32.41	Check power booster vacuum supply (hoses and check valve).
			32.42	Inspect hoses and line of Hydro-boost system.
			32.43	Bleed off hydraulic reserve pressure from accumulator.
			32.44	Check pump motor and accumulator operation.
				ANTILOCK BRAKE SYSTEMS
			32.45	Check ABS warning light operation sequence; pull trouble codes and determine if sequence is correct.
			32.46	Determine ABS system type; locate hydraulic modulator electrical relays, control module and speed sensors.

			32.47	Check speed sensor clearance and signal output.
			32.48	Bleed system following manufacturer's recommendations.
			32.49	Use electronic repair data base for retrieval of repair procedures, maintenance specifications and technical service bulletins.

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Total 0's = _____ Total 1's = _____ Total 2's = _____

Multiply the 1's X 1 = _____ 2's X 2 = _____

Add the results to determine the TOTAL SCORE _____

Automotive Technician Training Standards

Level III

3 – SUSPENSIONS STUDENT OUTCOMES LIST

School

Note: All procedures listed in this document are to be performed in accordance with industry-accepted practices and/or manufacturers' recommended procedures.

NOTE: No Evidence = 0, Some Evidence = 1, Meets Standards = 2

SCORE			I.D.
0	1	2	NO.

				STEERING SYSTEMS
			33.1	Inspect manual and power steering fluid levels and determine correct fluid.
			33.2	Change power steering system fluid.
			33.3	Inspect for power steering fluid leakage and repair leaks.
			33.4	Remove, inspect and replace power steering pump belt(s).
			33.5	Remove, inspect and replace power steering pump.
			33.6	Inspect and replace power steering hoses and fittings.
			33.7	Inspect steering gear (manual and power) for proper operation.

			33.8	Adjust manual/power steering gear.
			33.9	Inspect and replace rack and pinion inner rod ends (sockets) and bellow boots.
			33.10	Remove, inspect and replace rack and pinion mounting bushings and brackets.
			33.11	Remove, inspect and replace seals and gaskets.
			33.12	Inspect pitman arm, center-link/relay rod, idler arm and mountings.
			33.13	Remove, inspect, replace and pre-adjust tie rod sleeves, clamps and tie rod ends.
				GENERAL SUSPENSION SKILLS
			33.14	Identify lifting/jacking points for raising and supporting vehicle.
			33.15	Remove and replace wheel, replace lug nuts using proper torque and tightening sequence.
			33.16	Determine correct inflation pressure and inflate a tire to proper pressure.
			33.17	Verify tire wear pattern and determine cause.
			33.18	Identify causes of wheel/tire vibration.
			33.19	Properly rotate tires.
			33.20	Measure wheel, tire, axle and hub run-out.
			33.21	Identify causes of tire pull problems.
			33.22	Balance wheel and tire assembly.
			33.23	Dismount, inspect, repair (plug and patch) and remount tire on wheel.
			33.24	Inspect and replace shock absorbers.
			33.25	Determine electronically-controlled suspension system type and locate major components.
				FRONT SUSPENSIONS
			33.26	Inspect short and long arm-type suspension system.

			33.27	Inspect MacPherson strut suspension system.
			33.28	Remove, inspect and replace upper and lower control arm bushings, shafts and rebound bumpers.
			33.29	Inspect, remove and replace strut (compression/tension) rods and bushings.
			33.30	Measure ball joint clearance.
			33.31	Inspect, remove and replace upper and lower ball joints.
			33.32	Inspect, remove and replace coil springs and spring insulators.
			33.33	Inspect and adjust torsion bars and mounting points.
			33.34	Inspect and replace stabilizer bar bushings, brackets, mounts and links.
			33.35	Inspect and replace MacPherson strut cartridge or assembly.
			33.36	Lubricate suspension/steering components.
				REAR SUSPENSIONS
			33.37	Check and replace rear springs and spring insulators.
			33.38	Check and replace rear suspension system control arms, links, bushings and mounts.
			33.39	Check and replace rear strut cartridge or assembly.
				WHEEL ALIGNMENT
			33.40	Describe vehicle conditions causing wandering, pulling, hard steering and poor steering return problems.
			33.41	Measure vehicle ride height.
			33.42	Measure and adjust front and rear wheel camber.
			33.43	Measure and adjust front and rear wheel caster.

			33.44	Measure and adjust front and rear wheel toe.
			33.45	Center steering wheel.
			33.46	Measure toe-out-on-turns (turning radius).
			33.47	Measure SAI (steering axis inclination) / KPI (king pin inclination) included angle.
			33.48	Measure rear wheel thrust angle.
			33.49	Measure front wheel setback.
			33.50	Use a scan tool to reset zero-point calibration where applicable by OEM.
			33.51	Use electronic repair data base for retrieval of repair procedures, maintenance specifications and technical service bulletins.

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Total 0's = _____ Total 1's = _____ Total 2's = _____

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Automotive Technician Training Standards

Level III

4 – DRIVE TRAINS STUDENT OUTCOMES LIST

School

Note: All procedures listed in this document are to be performed in accordance with industry-accepted practices and/or manufacturers' recommended procedures.

NOTE: No Evidence = 0, Some Evidence = 1, Meets Standards = 2

SCORE			I.D.
0	1	2	NO.

				AUTOMATIC TRANSMISSION/TRANSAXLE
			34.1	Check fluid level and condition using OEM procedures and specifications.
			34.2	Determine correct ATF for a particular unit.
			34.3	Perform pressure tests.
			34.4	Perform stall tests.
			34.5	Perform lock-up converter system tests.
			34.6	Explain road test procedure, checking for proper shift points and shift quality.
			34.7	Identify potential source of leaks.
			34.8	Describe the operation of a Continuously Variable Transmission (CVT) and Hybrid/Electric drive train.
			34.9	Access service and repair information.

			34.10	Determine electronic controls for a particular unit.
				MAINTENANCE AND ADJUSTMENTS
			34.11	Inspect, adjust, or replace manual shift and throttle (TV) linkages/cables.
			34.12	Adjust bands.
			34.13	Replace fluids, gaskets and filters; inspect oil pan deposits, verify no leaks after replacement.
			34.14	Disconnect and inspect electrical wires and replace connectors.
			34.15	Service an automatic transmission (Items 34.11-34.13).
				IN-VEHICLE REPAIR
			34.16	Inspect, adjust and replace vacuum modulator; check vacuum modulator; check vacuum supply.
			34.17	Inspect, repair, and replace governor components.
			34.18	Inspect and replace external seals and gaskets.
			34.19	Inspect, repair, and replace extension housing; replace bushing and seal.
			34.20	Inspect, leak test, flush, and replace cooler, lines and fittings.
			34.21	Inspect and replace speedometer drive gear, driven gear, and retainers.
			34.22	Replace valve body assembly.
			34.23	Inspect servo bore, piston and related parts.
			34.24	Inspect accumulator bore, piston and related parts.
			34.25	Inspect, test and/or replace solenoids, sensors, relays, and switches.
			34.26	Inspect, replace, and align power train mounts.

				OFF-VEHICLE REPAIR
			34.27	Disassemble, clean, and inspect transmission/transaxle.
			34.28	Assemble transmission/transaxle. (To include Items 34.28-34.46 below as applicable).
				OIL PUMP AND TORQUE CONVERTER
			34.29	Inspect converter flex plate, attaching parts, pilot, pump drive and seal areas.
			34.30	Measure torque converter end play and check for internal interference; check stator clutch.
			34.31	Inspect, measure and replace oil pump housing, internal parts and bushings.
			34.32	Flush torque converter and transmission cooling system.
				GEAR TRAIN, SHAFTS, BUSHINGS AND CASE
			34.33	Perform end play and/or preload checks.
			34.34	Inspect, measure, and replace thrust washers and bearings.
			34.35	Inspect and replace shafts.
			34.36	Inspect oil delivery seal rings including ring groove and sealing surface area.
			34.37	Inspect and replace bushings.
			34.38	Inspect and measure planetary gear assembly.
			34.39	Inspect, repair, or replace cases.
			34.40	Inspect, repair or replace transaxle drive chains and related parts.
			34.41	Inspect, measure, repair, adjust or replace transaxle final drive components.
			34.42	Inspect and replace parking pawl, shaft, spring, and retainer.

				FRICITION AND REACTION UNITS
			34.43	Inspect and replace clutch assembly.
			34.44	Measure and adjust clutch pack clearance.
			34.45	Air test operation of clutch pack and servo assemblies.
			34.46	Inspect and replace roller and sprag clutches.
			34.47	Inspect and replace bands and drums.
				MANUAL TRANSMISSION AND CLUTCH
			34.48	Check pedal feel.
			34.49	Adjust clutch pedal clearance/free play and replace clutch linkage components.
			34.50	Inspect and replace hydraulic clutch slave and master cylinders, lines, and hoses.
			34.51	Bleed hydraulic system.
			34.52	Inspect and replace release (throw-out) bearing, lever, and pivot.
			34.53	Inspect and replace clutch pressure plate and disc assembly.
			34.54	Inspect and replace pilot bearing.
			34.55	Inspect and replace flywheel and ring gear.
			34.56	Inspect engine block, clutch housing, and transmission mating surfaces.
			34.57	Remove & replace clutch assembly (to include Items 34.47-34.55).
			34.58	Inspect a transmission for fluid leakage.
			34.59	Inspect a transmission for fluid level and condition.
			34.60	Drain and replace transmission fluid; inspect fluid condition.

			34.61	Adjust transmission shift linkage; inspect and replace shift linkage.
			34.62	Inspect, replace, and align power train mounts.
			34.63	Inspect and replace transmission gaskets, seals, and sealants.
			34.64	Disassemble and clean transmission components.
			34.65	Inspect, repair, or replace internal shift components.
			34.66	Inspect and replace input (clutch) shaft and bearings.
			34.67	Inspect and replace main shaft components and assembly.
			34.68	Inspect and replace synchronizer components and assembly.
			34.69	Inspect and replace cluster gear components and assembly.
			34.70	Inspect and replace reverse idler gear components and assembly.
			34.71	Measure gear end play.
			34.72	Inspect, repair, and replace extension housing and transmission case mating surfaces, bores, brushings, and vents.
			34.73	Inspect lubrication devices.
			34.74	Actual overhaul/rebuild a standard transmission, rear wheel drive (to include Items 34.62-34.72).
			34.75	Overhaul/rebuild a standard transaxle (to include Items 34.62-34.72 & 34.92-34.95).
				DRIVE SHAFT AND UNIVERSAL JOINT (FRONT AND REAR WHEEL DRIVE)
			34.76	Remove and replace FWD drive axle shaft.
			34.77	Remove and replace RWD drive shaft.
			34.78	Inspect and replace RWD universal joint.

			34.79	Inspect and replace CV joint and boot.
			34.80	Inspect and replace FWD front wheel bearing.
				REAR WHEEL DRIVE AXLE
			34.81	Inspect axle assembly for fluid leakage.
			34.82	Inspect axle for fluid level and condition.
			34.83	Drain and replace lubricant; replace with proper fluid and verify no leaks.
			34.84	Inspect and replace companion flange and pinion seal; measure companion flange run-out.
			34.85	Rebuild/overhaul a drive axle (Items 34.85 through 34.95).
			34.86	Inspect and replace ring and pinion gear.
			34.87	Measure ring gear run-out.
			34.88	Inspect and replace drive pinion gear, spacers, sleeves, and bearings.
			34.89	Measure and adjust drive pinion depth.
			34.90	Measure and adjust drive pinion and carrier bearing preload.
			34.91	Measure and adjust ring and pinion backlash (threaded cup or shim type).
			34.92	Perform ring and pinion tooth contact pattern checks.
			34.93	Remove and replace differential assembly and ring gear.
			34.94	Inspect, measure and replace differential pinion gears (spiders), shaft, side gears, thrust washers, and case.
			34.95	Inspect and replace differential side bearings.
			34.96	Measure differential case run-out.

				LIMITED SLIP DIFFERENTIAL
			34.97	Inspect, and refill with correct lubricant.
			34.98	Measure rotating/break-away torque at rear wheel.
			34.99	Inspect, adjust, and replace clutch (cone/plate) pack.
			34.100	Rebuild/overhaul a LSD (to include Items 34.92, 34.93 & 34.98).
				REAR WHEEL DRIVE AXLE SHAFTS
			34.101	Check for rear axle fluid leakage.
			34.102	Inspect and replace axle shaft wheel studs.
			34.103	Remove and replace axle shafts (press fit and c-lock).
			34.104	Inspect and replace axle shaft seals, bearings, and retainers.
			34.105	Measure rear axle flange run-out and shaft end play.
				FOUR WHEEL/ALL WHEEL DRIVE COMPONENTS
			34.106	Inspect, adjust, and repair transfer case shifting mechanisms.
			34.107	Drain, inspect and replace transfer case lubricant; determine correct lubricant.
			34.108	Inspect and service transfer case and components; check lube level.
			34.109	Remove and replace transfer case.
			34.110	Inspect, service, and replace front-drive shafts and universal joints.
			34.111	Inspect, service, and replace front-drive axle knuckles and driving shafts.
			34.112	Inspect, service, and replace front wheel bearings and locking hubs.
			34.113	Inspect four-wheel drive unit seals and remote vents.

			34.114	Rebuild/overhaul a transfer case (to include terms Items 34.106-34.112).
			34.115	Use electronic repair data base for retrieval of repair procedures, maintenance specifications and technical service bulletins.

SCORING TOTALS

Total 0's = _____ Total 1's = _____ Total 2's = _____

Multiply the 1's X 1 = _____ 2's X 2 = _____

Add the results to determine the TOTAL SCORE _____

Automotive Technician Training Standards

Level III

5 – HEATING & AIR CONDITIONING STUDENT OUTCOMES LIST

School

Note: All procedures listed in this document are to be performed in accordance with industry-accepted practices and/or manufacturers' recommended procedures.

NOTE: No Evidence = 0, Some Evidence = 1, Meets Standards = 2

SCORE			I.D.
0	1	2	NO.

				A/C SYSTEMS
			35.1	Understand requirements to earn appropriate certification.
			35.2	Identify all A/C system types, refrigerants, and oils used in all vehicles on the road.
			35.3	Connect gauges and/or recovery system.
			35.4	Conduct HV AC system performance test for proper operation of doors, duct temps, clutch operation, proper pressures/temperatures, proper component temperature and sight glass indications.
			35.5	Check for system blockage.
			35.6	Leak test system.
				A/C SYSTEM SERVICE
			35.7	Identify and recover refrigerant using EPA approved equipment and procedures.

			35.8	Flush system.
			35.9	Evacuate and recharge system using EPA approved equipment and procedures.
			35.10	Add correct oil and quantity to the system
				SYSTEM COMPONENTS
			35.11	Inspect, adjust and replace compressor drive belts.
			35.12	Inspect and replace belt idler pulley.
			35.13	Inspect, test, adjust and replace compressor clutch components.
			35.14	Remove and replace compressor.
			35.15	Repair or replace compressor mounts.
			35.16	Inspect and replace compressor shaft seal.
			35.17	Add the proper type and amount of oil to any replacement component.
			35.18	Remove and replace O-rings or gaskets at line connections.
			35.19	Remove, inspect, repair or replace hoses, lines, mufflers or filters.
			35.20	Inspect and clean condenser fins.
			35.21	Remove and replace condenser and seals.
			35.22	Remove, inspect and replace receiver/drier or accumulator/drier.
			35.23	Remove, inspect and replace TXV.
			35.24	Remove, inspect and replace orifice tube.
			35.25	Inspect, clean and deodorize evaporator and drain tube.
			35.26	Remove, identify, inspect and replace Schrader valves.
			35.27	Remove, inspect and replace system high pressure relief valves.
			35.28	Install refrigerant filter in system.

				ENGINE COOLING SYSTEM
			35.29	Conduct a visual inspection of cooling system.
			35.30	Perform cooling system pressure check.
			35.31	Test heater core for leaks.
			35.32	Inspect coolant condition and test freezing point.
			35.33	Recover coolant and refill system with proper coolant, purge air.
			35.34	Service a cooling system.
			35.35	Remove, inspect, replace and adjust drive belts.
			35.36	Remove, inspect, replace and test radiator/condenser electric fan and motor.
			35.37	Remove, inspect and replace radiator and heater hoses.
			35.38	Inspect, test and replace radiator cap.
			35.39	Follow the proper procedure to remove, inspect and replace radiator.
			35.40	Remove, inspect and replace coolant recovery tank and hose.
			35.41	Remove, inspect, test and replace thermostat.
			35.42	Understand the proper procedure to remove, inspect, test and flush heater core.
			35.43	Remove, inspect, replace, adjust and test heater coolant control valve.
				SYSTEM CONTROLS
			35.44	Inspect heating, ventilation and A/C systems for proper system operation.
			35.45	Measure voltage, amps, and resistance for the compressor clutch and blower motor.
			35.46	Remove, inspect, test and replace heating and AC fuses.
			35.47	Demonstrate the proper procedure to remove, inspect, test, and replace blower motor, resistors, switches, relays diodes, and sensors.

			35.48	Inspect, adjust and replace control head cables and linkage, control switches and hoses, vacuum actuators, vacuum reservoir, check valves, and restrictors.
			35.49	Scan for trouble codes.
			35.50	Check automatic temperature control system and adjust calibration.
			35.51	Use electronic repair data base for retrieval of repair procedures, maintenance specifications and technical service bulletins.

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Total 0's = _____ Total 1's = _____ Total 2's = _____

Multiply the 1's X 1 = _____ 2's X 2 = _____

Add the results to determine the TOTAL SCORE _____

Automotive Technician Training Standards

Level III

6 – ELECTRICAL/PERFORMANCE STUDENT OUTCOMES LIST

School

Note: All procedures listed in this document are to be performed in accordance with industry-accepted practices and/or manufacturers' recommended procedures.

NOTE: No Evidence = 0, Some Evidence = 1, Meets Standards = 2

SCORE			I.D.
0	1	2	NO.

				GENERAL
			36.1	Identify vehicle safety restraint system precautions and disabling methods.
			36.2	Identify circuits and locate components using a wiring diagram and component locator.
			36.3	Check circuits using a test light, PowerProbe, and Logic Probe where appropriate.
			36.4	Demonstrate proper usage and application of a digital multi-meter to measure voltage, voltage drops, resistance and amperes in various circuits.
			36.5	Use an ammeter to measure current.
			36.6	Use a digital ohmmeter to check continuity and measure resistance.
			36.7	Check a computerized vehicle for parasitic battery drain.

			36.8	Locate test and repair a fusible link and circuit breaker.
			36.9	Remove and replace fuses.
			36.10	Use electronic repair data base for retrieval of repair procedures, maintenance specifications and technical service bulletins.
			36.11	Set up and operate a digital storage lab oscilloscope.
			36.12	Inspect wiring and vacuum hoses to identify defects.
				ENGINE DIAGNOSIS
			36.13	Test and evaluate an engine using a vacuum gauge.
			36.14	Perform and evaluate a compression test.
			36.15	Perform and evaluate a cylinder leak test.
			36.16	Test and evaluate an engine using an infrared gas analyzer.
			36.17	Adjust valve lash.
				BATTERIES AND SERVICE
			36.18	Test and evaluate battery terminal voltage.
			36.19	Perform a battery load and inductance test.
			36.20	Clean and service a battery.
			36.21	Replace a battery.
			36.22	Inspect and charge a battery per battery manufacturer.
			36.23	Jump start a vehicle using jumper cables.
				STARTING SYSTEMS
			36.24	Perform a starter draw test.

			36.25	Test and evaluate system voltage drops.
			36.26	Test an ignition switch within the starter circuit.
			36.27	Inspect and evaluate a starter drive mechanism and flywheel.
			36.28	Use a remote starter to crank an engine.
				CHARGING SYSTEMS
			36.29	Inspect and properly install an alternator drive belt.
			36.30	Perform and evaluate alternator output test.
			36.31	Perform voltage drop test on a charging system.
			36.32	Remove and replace an alternator.
				LIGHTING SYSTEMS
			36.33	Replace a headlight.
			36.34	Inspect and test lighting system operation.
			36.35	Perform voltage drop test on a headlight circuit.
			36.36	Aim a vehicles headlight using manufacturers procedures.
			36.37	Remove, inspect and replace dash light circuit components.
			36.38	Voltage check a stoplight circuit and adjust a stoplight switch.
			36.39	Remove, inspect and replace turn signal mechanism and hazard light circuit components.
			36.40	Locate, remove and replace flasher.
			36.41	Voltage check back-up light circuit.

				GAUGES AND WARNING DEVICES
			36.42	Test and evaluate gauges and sending units.
			36.43	Test and evaluate warning light circuits and components.
				HORN, WIPER/WASHER
			36.44	Remove and replace horn switch.
			36.45	Remove and replace washer motor.
			36.46	Test and evaluate horn circuit and components.
			36.47	Test and evaluate wiper and washer circuit components.
			36.48	Remove and replace wiper arms and blades.
				ACCESSORY SYSTEMS
			36.49	Test and evaluate power window circuit and components.
			36.50	Test and evaluate rear window defogger circuit and components.
			36.51	Test and evaluate electric door and trunk lock circuit and components.
			36.52	Test and evaluate radio antenna operation.
			36.53	Test accessory power receptacle circuit.
			36.54	Test and evaluate cruise control components.
				IGNITION SYSTEMS
			36.55	Test and evaluate ignition systems.
			36.56	Install plug wires, cap & rotor, spark plugs.
			36.57	Adjust base timing and verify ignition timing advance on distributor systems.

			36.58	Test and service ignition advance system.
				FUEL SYSTEMS
			36.59	Inspect for leaks to determine next action.
			36.60	Test and evaluate fuel pressure and volume on a fuel system.
			36.61	Conduct a EFI cleaning service.
			36.62	Remove and replace fuel filter on a gasoline engine.
			36.63	Test and evaluate fuel injection system components.
				EMISSION CONTROL SYSTEMS
			36.64	Inspect exhaust system for leaks and noises.
			36.65	Four or five gas check an engine at 1500 RMP, 2500 RPM, curb idle and snap acceleration.
			36.66	Remove, replace & test PCV system components.
			36.67	Visually inspect and test air injection system components.
			36.68	Visually inspect evaporative emission system components.
			36.69	Test and evaluate EGR system components and controls.
			36.70	Test and evaluate heated air intake (TAC) system components.
			36.71	Use emission control application manuals.
			36.72	Identify emission controls using under-hood label for various make, model and year applications.
			36.73	Locate and identify DLC
				COMPUTER SYSTEMS
			36.74	Inspect wiring, sensors, switches and actuators.

			36.75	Test and evaluate for effective fuel control.
			36.76	Retrieve trouble codes.
			36.77	Use a flow chart to locate cause of current, intermittent, and history fault codes.
			36.78	Setup and read a scan tool trouble codes and serial data stream.
			36.79	Clear computer memories on all vehicles used in this skill area.
			36.80	Use manufacturers procedures to test and evaluate network systems (CAN) and components.
				MISCELLANEOUS
			36.81	Be able to communicate effectively with good verbal skills.
			36.82	Properly generate and expand a repair order using "Write-it-Right" guidelines.

SCORING TOTALS

Total 0's = _____ Total 1's = _____ Total 2's = _____

Multiply the 1's X 1 = _____ 2's X 2 = _____

Add the results to determine the TOTAL SCORE _____

Automotive Technician Training Standards

Level III

7 – EMISSION STUDENT OUTCOMES LIST

School

Note: All procedures listed in this document are to be performed in accordance with industry-accepted practices and/or manufacturers' recommended procedures.

NOTE: No Evidence = 0, Some Evidence = 1, Meets Standards = 2

SCORE			I.D.
0	1	2	NO.

				CUSTOMER COMMUNICATIONS
			37.1	Evaluate vehicle information to determine if the vehicle needs an inspection and which type of inspection is needed at what type of station.
			37.2	Determine vehicle emission requirements using vehicle emission label or the application manual and determine type of vehicle certification (e.g., California, Federal of BAR label).
			37.3	Verify customer's DMV renewal notice and vehicle information (e.g., VIN label, license number) to determine accuracy of information prior to performing smog check inspection.
			37.4	Properly generate and expand a repair order using "Write-it-Right" guidelines.
			37.5	Inform customer about the purpose(s) of the smog check program.

			37.6	Consult with the customer regarding smog check visual and functional tests.
			37.7	Inform customer of the option and scope of a pretest smog inspection.
			37.8	Inform the customer about the results using the VIR, provide a list of authorized repair smog repair dealers.
			37.9	Provide consumer with a vehicle repair cost estimate documenting recommended vehicle repairs following diagnostic testing procedures.
			37.10	Obtain consumer authorization to perform repairs on vehicle as determined by diagnostic testing.
			37.11	Consult with consumer to determine if vehicle repairs may be covered under warranty prior to performing repairs.
			37.12	Consult with consumer regarding a retest following repairs made to vehicle.
				SAFETY
			37.13	Perform visual safety inspection on vehicle by checking condition of vehicle components (e.g., fluid leaks) prior to performing smog check inspection.
			37.14	Evaluate vehicle throughout smog check inspection process to determine if smog check inspection should be aborted to maintain safety.
			37.15	Maintain technician safety while servicing vehicle by following recommended procedures of vehicle and equipment manufacturers.
			37.16	Maintain safety and cleanliness of the testing area.
				CALIBRATION OF TEST ANALYZERS AND DEVICES
			37.17	Perform calibration of emissions testing systems to ensure accurate functioning of systems during smog check inspection.
			37.18	Perform visual inspection of analyzer components (e.g., RPM pickup) to ensure accurate functioning of systems during smog check inspection.
			37.19	Inspect test analyzer devices to ensure accurate functioning of devices during smog check inspection or replace if needed.
			37.20	Perform troubleshooting procedure on test analyzer sample system to restore function of system.
			37.21	Perform troubleshooting procedures on LPFET analyzer to restore function to system.

			37.22	Perform troubleshooting procedures on fuel cap test device to restore function to system.
			37.23	Inspect dynamometer to ensure safe operation prior to performing calibration.
			37.24	Perform troubleshooting procedures on dynamometer to restore function to system.
				EMISSIONS TEST(S) PROCEDURES
			37.25	Validate technician authorization to perform emissions test by entering access code into analyzer.
			37.26	Prepare vehicle for LPFET test.
			37.27	Perform LPFET test as required by vehicle type.
			37.28	Prepare vehicle for emissions test by warming engine to operating temperature prior to performing emissions test.
			37.29	Perform pretest smog test inspection.
			37.30	Perform two speed idle (TSI) test as prompted by analyzer to evaluate vehicle emissions.
			37.31	Prepare vehicle for emissions test by operating cooling fan to prevent overheating of vehicle during ASM emissions test as prompted by analyzer.
			37.32	Perform acceleration simulation mode (ASM) test as prompted by analyzer to evaluate vehicle emissions.
			37.33	Perform BAR-OIS test as prompted by analyzer to evaluate vehicle emissions.
				VISUAL INSPECTION
			37.34	Perform comprehensive visual inspection of vehicle as prompted by test analyzer to detect the presence of fuel leaks.
			37.35	Perform comprehensive visual inspection of vehicle as prompted by test analyzer to verify fuel induction system on vehicle.
			37.36	Perform comprehensive visual inspection of vehicle as prompted by test analyzer to verify installation of fuel evaporative (EVAP) system on vehicle.
			37.37	Perform comprehensive visual inspection of vehicle as prompted by test analyzer to verify installation of other emission related components on vehicle.

			37.38	Verify vehicle emissions components to determine whether components are original to the vehicle or permitted substitutes for the vehicle.
			37.39	Perform comprehensive visual inspection of vehicle as prompted by test analyzer to verify installation of positive crankcase ventilation (PCV) system on vehicle.
			37.40	Perform comprehensive visual inspection of vehicle as prompted by test analyzer to verify installation of sensors, switches, and computers on vehicle.
			37.41	Perform comprehensive visual inspection of vehicle as prompted by test analyzer to verify installation of exhaust gas recirculation (EGR) system on vehicle.
			37.42	Perform comprehensive visual inspection of vehicle as prompted by test analyzer to verify installation of ignition spark control system(s) on vehicle.
			37.43	Perform comprehensive visual inspection of vehicle as prompted by test analyzer to verify installation of proper exhaust gas treatment systems, (e.g., catalytic converters, etc.) on vehicle.
			37.44	Perform comprehensive visual inspection of vehicle as prompted by test analyzer to verify installation of air injection (AIS) system on vehicle.
			37.45	Perform visual smoke test.
			37.46	Perform comprehensive visual inspection of vehicle as prompted by test analyzer to verify installation of thermostatic air cleaner (TAC) system on vehicle.
				FUNCTIONAL TEST(S)
			37.47	Evaluate function of the exhaust gas recirculation system as prompted by the analyzer by following vehicle manufacturers procedure.
			37.48	Evaluate ignition timing of the vehicle as prompted by the analyzer by following vehicle manufacturers procedure.
			37.49	Evaluate vehicle's malfunction indicator light (MIL) by performing functional test.
			37.50	Perform OBD II test as prompted by the analyzer to determine vehicles readiness indicator and code status.
				DIAGNOSIS
			37.51	Evaluate emissions results (e.g., excessive HC, excessive CO, excessive NOx) to identify vehicle system(s) that need diagnostic testing.
			37.52	Evaluate OBD II results to identify vehicle system(s) that need diagnostic testing.

			37.53	Evaluate vehicle to determine if failure was due to a defective condition or tampering.
			37.54	Perform diagnostic testing on vehicles system(s) that indicate failure during smog check inspection to identify areas of repair.
			37.55	Evaluate diagnostic readings to determine if a system failure in a vehicle may be causing other systems to fail.
			37.56	Inspect the vehicle to verify the failure identified on the vehicle inspection (VIR) prior to performing diagnostic testing.
				PERFORMING AND VERIFYING REPAIRS
			37.57	Evaluate diagnostic testing results to determine if components of vehicle need to be cleaned, repaired or replaced.
			37.58	Replace components of vehicle as indicated by vehicle diagnosis.
			37.59	Repair components of vehicle as indicated by vehicle diagnosis.
			37.60	Clean components of vehicle as indicated by vehicle diagnosis.
			37.61	Perform tests to determine if the vehicle repairs are successful.

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