

# PRACTICE EXAM 15: RED SEAL 310S SIMULATION (125 QUESTIONS)

---

1. A customer requests a quote for a brake job on a vehicle they describe as "stops fine, just makes noise." Before committing to a fixed price, the MOST important first step is to:

- A. Quote the full pad-and-rotor replacement price based on the noise complaint alone
- B. Inform the customer the work cannot be quoted until parts are ordered
- C. Perform a brief brake inspection (pad measurement, rotor condition, system check) and provide a quote based on actual condition, since noise alone does not identify which components need service
- D. Decline the work because brake noise diagnosis is too unpredictable to quote

2. A technician will spend 15 minutes grinding rusted exhaust hangers with an angle grinder. The MOST cost-effective approach to required PPE is to:

- A. Wear Z87+ safety glasses, face shield, hearing protection, gloves, and a dust mask — the equipment is shop-provided and prevents far more costly injuries
- B. Wear only safety glasses to save time donning the additional equipment
- C. Borrow another technician's PPE for the brief task at hand
- D. Skip PPE entirely because the grinding will only take a few minutes

3. A customer brings in a partially-used container of a specialty fuel additive with no original label. The MOST appropriate response is to:

- A. Use the product based on the customer's verbal description of its purpose

B. Refuse to handle or use the unlabeled product, since WHMIS regulations require all controlled products to be properly labeled and accompanied by an SDS before workplace use

C. Apply a generic flammable liquid label and proceed with use

D. Smell the product to determine its likely chemical composition

4. A repair order shows the customer authorized \$400 of work. Mid-repair, the technician discovers an additional \$250 of work is needed. The MOST cost-effective response is to:

A. Complete the additional work and bill the customer the higher total later

B. Skip the additional work to stay under the authorized amount

C. Use lower-quality parts to keep total under the authorized amount

D. Stop work, contact the customer with the diagnosis and revised estimate, and obtain documented authorization before proceeding — completing unauthorized work risks making the additional charges non-collectible

5. A customer cuts their hand on a sharp metal edge in the customer service area and is bleeding moderately. The MOST appropriate first-aid response is to:

A. Apply direct pressure with a clean cloth or sterile dressing, elevate the hand above heart level, and contact emergency services if bleeding does not slow within 5–10 minutes; document the incident per the shop's first-aid log

B. Apply a tourniquet immediately above the cut to stop the bleeding

C. Rinse the wound with shop solvent for cleaning purposes

D. Ignore the cut and direct the customer to seek medical care on their own

6. A customer requests the shop reduce labor costs by allowing them to use their own tools while the technician supervises. The MOST appropriate response is to:

- A. Allow the customer to use their tools under supervision to save labor cost
- B. Charge the customer half the labor rate for supervised customer work
- C. Decline the request — only certified technicians may work on customer vehicles, both for liability reasons and because customers are not covered under workplace insurance
- D. Allow customer participation but disclaim the shop's responsibility

7. A vehicle requires service that will pause overnight with the vehicle on a two-post hoist. The MOST cost-effective and safe approach is to:

- A. Lower the vehicle and re-lift it the next day, accepting the lost time
- B. Leave the vehicle elevated and post a sign on the shop door
- C. Move the vehicle to a different bay every shift change
- D. Engage the hoist's mechanical safety locks, apply personal lockout/tagout at the energy isolation point, document it in the shop log, and continue the work at the next shift

8. A customer is upset their vehicle is not ready by the promised time. The MOST professional response is to:

- A. Blame the parts supplier for the delay without explanation
- B. Apologize, explain the cause honestly, provide a realistic new completion time, and offer reasonable accommodation (shuttle, loaner, or schedule discount) when the delay is shop-caused
- C. Tell the customer to wait quietly until the vehicle is ready
- D. Offer a partial refund to compensate for the inconvenience

9. A shop owner asks a technician to work alone on a Saturday to complete an urgent repair. The MOST appropriate response under provincial OHS regulations is to:

- A. Decline the work because working alone is never permitted by regulation
- B. Accept the work without any special precautions taken
- C. Accept the work only after establishing a written working-alone procedure with scheduled check-ins, a designated contact person, and documented emergency response steps
- D. Accept the work but skip any check-in procedures to save time

10. A customer's 6-year-old vehicle has a blown head gasket. Estimated repair cost is \$2,200; the vehicle's market value is \$4,500 and is otherwise in good condition. The MOST appropriate advisory is:

- A. The repair is reasonable since the cost is less than half of market value, the rest of the vehicle is sound, and a proper repair restores the engine for many more years of service
- B. Replace the vehicle immediately since the repair exceeds 25% of market value
- C. Apply a sealant additive instead and avoid the repair entirely
- D. Sell the vehicle as-is for scrap value without further investment

11. A customer asks whether to replace their thermostat preventively at 100,000 km when no symptoms exist. The MOST cost-effective recommendation is:

- A. Replace the thermostat immediately because failure is imminent
- B. Replace the entire cooling system as a single preventive service
- C. Wait until the thermostat fails completely before any service
- D. Follow the manufacturer's service interval for thermostat replacement; if no symptoms exist and the interval has not been reached, decline the preventive replacement and inspect at routine intervals

12. A vehicle has DTC P0301 (cylinder 1 misfire). Cost-effective initial diagnosis is to:

- A. Replace all spark plugs, ignition coils, and injectors preventively
- B. Swap the cylinder 1 coil to cylinder 2 and clear the code; if the misfire moves to cylinder 2 (P0302), the coil is the failed component and only one needs replacement
- C. Replace the entire engine based on the misfire code
- D. Send the vehicle to a dealership for OEM-only diagnosis

13. A vehicle's port fuel injectors are dirty causing lean misfires. The MOST cost-effective service is:

- A. Professional injector cleaning using a pressure-cleaning machine that runs cleaner through the rail; this costs roughly 10% of injector replacement and resolves most carbon deposits
- B. Replace all injectors immediately with new OEM units
- C. Add over-the-counter fuel cleaner to the tank and recheck in 5,000 km
- D. Disassemble the entire intake manifold for ultrasonic cleaning of each injector

14. A customer reports drips of oil under their parked vehicle. The MOST efficient diagnostic approach is to:

- A. Replace all engine seals preventively without inspection
- B. Disassemble the engine to find the source of the leak
- C. Clean all suspect areas, run the engine to operating temperature, and use UV dye in the engine oil with a UV light to identify the leak's source precisely before any repair
- D. Use sealant additive in the engine oil to attempt to seal the leak

15. A customer's interference-engine vehicle is at 145,000 km. The manufacturer specifies timing belt replacement at 150,000 km or 7 years. The vehicle is 9 years old. The recommendation is to:

- A. Defer the belt replacement until 150,000 km is reached
- B. Replace the timing belt now, along with the water pump and tensioner — the belt is past its time interval, and waiting for mileage risks belt failure that destroys an interference engine
- C. Replace only the belt without the water pump or tensioner
- D. Recommend the customer trade the vehicle to avoid the cost

16. Compression test results: Cyl 1: 165, Cyl 2: 160, Cyl 3: 95, Cyl 4: 162 psi. A wet test on cyl 3 raises it to 150 psi. The MOST cost-effective decision is:

- A. Replace the entire engine immediately to address suspected wear
- B. Replace only the spark plug on cylinder 3 and retest
- C. Add an engine treatment additive and recheck in 5,000 km
- D. Recommend an engine rebuild or replacement quote with full transparency about cost relative to vehicle value, so the customer can make an informed decision

17. A vehicle has confirmed low fuel pressure and the in-tank fuel pump is failed. The MOST cost-effective repair is:

- A. Replace the failed fuel pump assembly, replace the fuel filter (often integrated), inspect the tank for contamination, and document the repair
- B. Replace only the pump motor while reusing all other components
- C. Bypass the failed pump with an external pump installed under the hood
- D. Recommend the customer purchase a different vehicle

18. A customer wants to skip the EVAP system repair to save money. The MOST appropriate response is:

- A. Allow the customer to skip the repair if they accept the responsibility
- B. Disable the EVAP monitor in the PCM to clear the warning light
- C. Inform the customer that the EVAP repair is required for emissions compliance, will cause MIL re-illumination if skipped, and may prevent passing safety inspection in jurisdictions that test emissions
- D. Disconnect the EVAP system entirely as the cheapest workaround

19. A customer asks whether premium spark plugs are worth the extra cost over standard plugs. The MOST honest response is:

- A. Premium plugs always provide superior performance; install them
- B. Plug choice should match the manufacturer's specification (heat range, gap, electrode); aftermarket "premium" plugs often differ from spec and do not necessarily improve performance — OEM-equivalent plugs at the recommended interval are typically the best value
- C. Premium plugs offer no real difference; install the cheapest option
- D. Plug brand and type are entirely a matter of personal preference

20. A customer's vehicle has 90,000 km on the original coolant and wants to extend the service interval. The MOST appropriate advisory is:

- A. Coolant lasts the life of the vehicle without service
- B. Replace only the coolant volume in the reservoir
- C. Drive the vehicle harder to extend coolant life
- D. Follow the manufacturer's coolant service interval (typically 80,000–160,000 km depending on type); aged coolant loses its corrosion inhibition and pH buffering, leading to radiator, water pump, and heater core damage that costs many times the coolant service

21. A vehicle has a small vacuum leak causing lean fuel trim at idle. The MOST cost-effective repair approach is:

- A. Add intake manifold sealant through the throttle body
- B. Replace the entire intake manifold and all gaskets preventively
- C. Locate the leak source with a smoke machine, replace only the failed gasket or hose at the leak point, and verify the lean condition resolves
- D. Disable the lean fuel trim monitor in the PCM to clear the codes

22. A vehicle has DTC P0325 (Knock Sensor Circuit). Cost-effective diagnosis is to:

- A. Replace the PCM as the source of the knock sensor signal
- B. Replace the engine immediately as a precaution
- C. Inspect the knock sensor wiring connector for damage and verify the sensor's resistance against specification; if the sensor itself has failed, replace only the knock sensor
- D. Replace all engine sensors as a preventive package

23. A vehicle has DTC P0135 (Upstream O2 Sensor Heater Circuit). Cost-effective approach is to:

- A. Replace the catalytic converter as a related component
- B. Replace all four O2 sensors at once for consistency
- C. Replace the entire exhaust system assembly
- D. Verify the heater circuit voltage at the sensor connector, measure the heater element resistance, and replace only the failed upstream O2 sensor; downstream sensors are unaffected

24. A vehicle has P0420 (Catalyst Efficiency Below Threshold) and the customer asks if they can drive with it. The MOST honest advisory is:

- A. Drive with the code indefinitely; it has no real consequence
- B. The vehicle can drive normally short-term, but the catalyst has aged and is no longer reducing emissions to specification; replacement is required for emissions compliance, and operating with active misfires would damage a new catalyst as well
- C. Replace the engine immediately to prevent further damage
- D. Disable the catalyst monitor in the PCM as the solution

25. A turbocharger has failed at 200,000 km. The MOST cost-effective repair approach is:

- A. Inspect the turbo for failure mode (oil starvation, foreign object damage, age-related wear), replace with a quality remanufactured or new unit, address the root cause, and replace oil and filter to remove contamination
- B. Replace only the impeller and reuse the housing
- C. Replace the entire engine including the turbo
- D. Add turbo treatment additive to the fuel

26. A vehicle has DTC P0401 (EGR Flow Insufficient). Inspection reveals heavy carbon buildup in the EGR passages. The MOST cost-effective repair is:

- A. Replace the entire intake manifold and EGR system
- B. Disconnect the EGR system to eliminate the code
- C. Add an EGR cleaner additive through the fuel
- D. Clean the EGR valve and passages mechanically with proper solvent and brushes, reinstall, and recheck operation; if the valve itself is failed, replace only the valve

27. A vehicle has a stuck-open PCV valve causing lean codes. The MOST cost-effective repair is:

- A. Replace the entire intake manifold and crankcase ventilation system
- B. Disconnect the PCV system permanently to eliminate the lean condition
- C. Replace only the PCV valve (an inexpensive part), verify the lean condition resolves, and inspect the grommet and hose during installation
- D. Replace the engine because of the lean DTCs

28. A vehicle's timing chain rattles on cold start; the tensioner is failing. The MOST cost-effective repair is:

- A. Replace only the tensioner without inspecting the chain
- B. Replace the timing chain, guides, tensioner, and related components per the manufacturer's kit, since the chain has stretched and replacing only one component leaves the others to fail soon
- C. Add high-viscosity oil to mask the rattle
- D. Recommend the customer trade the vehicle to avoid the repair

29. A vehicle has white exhaust smoke and coolant loss. A block test confirms combustion gases in the cooling system. The MOST honest advisory is:

- A. Quote the head gasket replacement (with head resurfacing, new bolts/gaskets, machining as needed) and verify against vehicle market value, so the customer can decide on repair vs. replacement
- B. Add a head gasket sealant additive as the solution
- C. Drive the vehicle until the head gasket fails completely
- D. Disconnect the cooling system to prevent further loss

30. A vehicle has internal engine damage from oil starvation; rebuilding will cost \$4,500, the market value is \$7,000. The MOST appropriate recommendation is:

- A. Always recommend the rebuild regardless of value
- B. Always recommend selling the vehicle as scrap
- C. Substitute a poor-quality used engine to minimize cost
- D. Present all options (rebuild with warranty, used engine at lower cost with no warranty, trade-in value, replacement vehicle cost) and let the customer make an informed financial decision

31. A customer wants the shop to install a used engine they purchased online for \$800. The MOST appropriate response is to:

- A. Refuse the work outright because used engines are unreliable
- B. Install the used engine without any inspection
- C. Inspect the used engine before installation (compression, leak-down, oil condition, visible damage), document the as-received condition with photos, and proceed only after the customer accepts the inherent warranty limitations on used parts
- D. Install the engine and offer a full shop warranty on the used part

32. A vehicle has multiple U-codes across several modules. The MOST cost-effective initial diagnosis is to:

- A. Replace each module showing communication faults
- B. Measure CAN-H to CAN-L resistance with the system off (a healthy bus reads ~60  $\Omega$ ), then check power and ground at the gateway and affected modules — a non-invasive test that often reveals the root cause within minutes
- C. Replace the gateway module preventively

D. Disconnect each module sequentially without any testing

33. A vehicle requires PCM reprogramming for a known TSB. The MOST cost-effective approach for an independent shop is to:

A. Use a J2534 pass-through device with the manufacturer's reprogramming software, maintain stable battery voltage with a support charger, and follow the OEM procedure — this allows the shop to perform reprogramming without dealer dependency

B. Send the vehicle to the dealer for any reprogramming

C. Skip the reprogramming and let the customer decide later

D. Substitute a salvage PCM with the desired calibration

34. A customer's TPMS sensor has failed at 8 years old. The MOST cost-effective recommendation is:

A. Replace all four TPMS sensors immediately

B. Disable the TPMS warning light through the BCM

C. Install aftermarket valve stems and ignore the TPMS function

D. Replace the failed sensor with an OEM or quality aftermarket unit, and inform the customer that the other three are likely near end of service life — discuss staggered replacement vs. all-at-once based on the vehicle's expected service life

35. A vehicle's BCM has failed and must be replaced. The MOST cost-effective approach is to:

A. Replace the BCM with a salvage unit from another vehicle

B. Replace with a new OEM (or OEM-equivalent) module, program with the VIN and option configuration, then perform required learn procedures — the new module includes warranty and guaranteed compatibility

- C. Skip the BCM replacement and operate the vehicle without body control
- D. Bypass the BCM with discrete relays for each function

36. A specific module is not communicating on the network bus. The MOST cost-effective diagnostic approach is to:

- A. Replace the module immediately based on the no-communication symptom
- B. Replace the entire vehicle wiring harness as a precaution
- C. Verify the module has proper power and ground at its connector first, then check bus continuity, then test the module — the systematic approach catches simple faults at low cost
- D. Disconnect the entire bus and rebuild the network

37. A shop owner is choosing between a generic scan tool (\$300) and an enhanced scan tool (\$2,500). The MOST cost-justified choice for a full-service shop is:

- A. The enhanced scan tool — it provides manufacturer-specific DTCs, full data PIDs, bidirectional commands, module configuration, and reprogramming capability; the additional capabilities pay for themselves quickly through reduced dealer dependency
- B. The generic scan tool since most repairs are basic
- C. No scan tool; rely on visual inspection and code readers
- D. Skip the scan tool and refer all complex diagnostics to dealers

38. A J2534 reprogramming session fails partway through, leaving the module unresponsive. The MOST appropriate response is to:

- A. Replace the module immediately as bricked

B. Apply 12 V directly to the module to "reset" it

C. Disconnect the battery for 30 minutes and try again

D. Maintain stable battery voltage with the support charger, then attempt the manufacturer's documented recovery procedure (often a boot-mode recovery flash); recovery succeeds in most failed-flash cases when properly attempted

39. A vehicle has an intermittent symptom suspected to be a known issue. The MOST cost-effective diagnostic approach is to:

A. Begin extensive part replacement immediately

B. Search the manufacturer's TSBs and recall database for the make/model/year and symptom; following a documented TSB procedure often resolves the symptom in a fraction of the time of blind diagnosis

C. Send the vehicle to the dealer without preparation

D. Document the symptom and decline further work

40. A shop owner wants to perform reprogramming on FCA vehicles with security gateway modules. The MOST cost-effective approach is to:

A. Bypass the security gateway by physically disconnecting it

B. Refuse all FCA reprogramming work and refer to dealers

C. Register for the manufacturer's secure portal (AutoAuth) with verified credentials linked to the shop's account, then perform reprogramming through the standard J2534 process — this enables full capability on protected vehicles

D. Use any J2534 device without credentials

41. A customer brought a used PCM from a salvage yard and asks the shop to install it. The MOST appropriate response is:

A. Inform the customer that used PCMs are typically VIN-locked to the original vehicle and either cannot be installed elsewhere or require expensive specialized reprogramming; recommend an OEM-new or factory-reflashed PCM as the more cost-effective long-term solution

B. Install the used PCM and ignore any compatibility issues

C. Install the used PCM and try to start the vehicle

D. Refuse all work involving the customer's vehicle

42. A vehicle has communication failures only between specific module pairs while other modules communicate normally. The most likely cause and approach is:

A. Replace all modules on the affected network

B. Replace the wiring harness between the affected modules

C. Disconnect the battery for 30 minutes

D. Suspect the gateway module's routing/translation function, since the gateway forwards messages between buses; diagnose with scan tool data showing which messages are missing, and verify gateway operation before replacement

43. Before any diagnostic work on a vehicle with intermittent electrical symptoms, the MOST cost-effective preparation is to:

A. Replace the battery without testing

B. Test the battery state of charge and health, verify charging system voltage at idle and 2000 RPM, and check for parasitic draw — many intermittent symptoms trace to marginal supply voltage

C. Replace all relays and fuses preventively

D. Skip electrical testing and replace suspected modules

44. A vehicle has a slipping clutch at 180,000 km. The MOST cost-effective repair is:

A. Replace the clutch disc, pressure plate, throw-out bearing, and pilot bearing as a complete kit, and resurface or replace the flywheel as needed; replacing only the disc leaves the other worn components to fail soon

B. Replace only the clutch disc to save cost

C. Add a clutch friction additive to the system

D. Adjust the clutch cable to compensate for wear

45. A FWD vehicle has a torn outer CV boot but no clicking sound during turns. The MOST cost-effective service is:

A. Wait until the joint fails before any service

B. Replace the entire steering knuckle and axle assembly

C. Re-boot the CV joint promptly (clean, repack with the correct grease, install a new boot) before contamination damages the joint — significantly cheaper than full axle replacement

D. Apply tape over the boot tear to seal it

46. A customer's RWD vehicle has not had differential service at 90,000 km. The MOST appropriate recommendation is:

A. Skip the service if no symptoms are present

B. Replace the entire differential assembly preventively

C. Drive the vehicle until the differential fails completely

D. Follow the manufacturer's service interval (typically 60,000–120,000 km depending on use); drain the old fluid, inspect for metal particles, refill with the specified gear oil and friction modifier, and document the service

47. A customer with a 100,000 km automatic transmission asks about a "transmission flush" service. The MOST honest advisory is:

- A. Perform the aggressive power flush regardless of vehicle history
- B. Follow the manufacturer's recommendation: many specify a drain-and-refill at specific intervals, while aggressive power-flush on a transmission with significant accumulated debris can dislodge particles and cause shifting issues
- C. Skip the service entirely; modern transmissions are sealed
- D. Recommend the customer trade the vehicle to avoid the service

48. A driveshaft U-joint shows minor rust on the cap surfaces but no looseness or roughness. The MOST cost-effective approach is:

- A. Continue normal operation but inspect at each service interval; replace only when looseness, roughness during rotation, or torn seals are present — minor surface rust alone is not a service trigger
- B. Replace the U-joint immediately as a precaution
- C. Replace the entire driveshaft assembly
- D. Apply grease and continue without further inspection

49. A customer's CVT-equipped vehicle has 80,000 km and the manufacturer specifies CVT fluid replacement at 90,000 km. The MOST cost-effective recommendation is:

- A. Skip the service since the transmission is still functional
- B. Replace the entire CVT assembly preventively
- C. Schedule the CVT fluid service at the specified interval using the manufacturer's specific CVT fluid (not generic ATF); fluid degradation accelerates wear of the belt and pulleys, and proper service significantly extends transmission life

D. Drive the vehicle until the CVT fails completely

50. A 4WD transfer case has 110,000 km with no service since new. The customer asks if service is needed. The MOST appropriate advisory is:

A. Service is never needed on a transfer case

B. Replace the entire transfer case assembly

C. Drive the vehicle until problems develop

D. Drain and inspect the fluid (looking for water contamination, metal particles, or burnt smell), then refill with manufacturer-specified fluid; transfer case service is far less expensive than the damage that develops from neglected fluid

51. A hydraulic clutch master cylinder is leaking. The MOST cost-effective repair is:

A. Add brake fluid to compensate for the leak

B. Replace the master cylinder, replace contaminated fluid in the system (spilled fluid damages paint and connections), bleed the slave cylinder, and verify proper operation — internal rebuild kits are rarely cost-effective on modern designs

C. Replace the entire clutch and transmission assembly

D. Disable the clutch and convert to automatic

52. A manual transmission grinds entering 3rd gear. Clutch operation tests normal. The MOST cost-effective service is:

A. Replace the entire transmission with a salvage unit

B. Add a transmission additive to the gear oil

C. Diagnose specifically (3rd gear synchronizer is most likely worn), open the transmission case, replace only the affected synchronizer ring and inspect related components, then reseal and refill — partial repair is much cheaper than replacement when the fault is isolated

D. Drive the vehicle ignoring the grind

53. A vehicle's AWD system has been inactive for 60,000 km (no AWD service has been done). The MOST cost-effective recommendation is:

A. Drain and replace the AWD coupling fluid per the manufacturer's specification, since the fluid carries clutch material and degrades with use; neglected fluid causes premature clutch wear and expensive coupling replacement

B. Replace the entire AWD coupling unit preventively

C. Disable the AWD system to extend its life

D. Ignore the service since the AWD is not actively used most of the time

54. A vehicle has a leaking differential pinion seal. The MOST cost-effective repair approach is:

A. Add stop-leak additive to the differential

B. Drive the vehicle and ignore the leak

C. Replace the entire differential assembly

D. Replace only the pinion seal (marking the nut position to preserve preload), inspect the yoke for wear at the seal surface, refill with the correct fluid, and verify no further leakage

55. A driveshaft vibration is identified at highway speed. Visual inspection shows missing balance weights but no other damage. The MOST cost-effective repair is:

A. Replace the entire driveshaft assembly

B. Re-balance the driveshaft on a chassis dynamometer (or send it to a driveshaft specialist for balancing), addressing the actual fault at significantly lower cost

C. Apply additional weights randomly until vibration reduces

D. Drive the vehicle ignoring the vibration

56. A vehicle's torque converter clutch is reporting 15% slip on scan data (spec under 5%) and the vehicle is at 175,000 km. The MOST realistic customer advisory is:

A. The TCC friction surface is wearing; the transmission can function short-term but slip will progress, eventually causing overheating; recommend planning for transmission service or replacement with transparent cost discussion

B. Replace the engine immediately to address TCC slip

C. Add a transmission additive to seal the TCC

D. Drive the vehicle ignoring the slip indication

57. An AWD vehicle has DTC C0387 (AWD Coupling Performance) intermittently. The MOST cost-effective diagnostic approach is:

A. Replace the entire AWD system immediately

B. Disconnect the AWD coupling permanently

C. Read scan tool data to identify the inhibit conditions (front-rear wheel speed difference, coupling current, fluid temperature), then verify the coupling fluid level and condition, before any parts replacement

D. Replace the front and rear differentials together

58. A customer asks whether to use synthetic or conventional gear oil in their manual transmission. The MOST appropriate recommendation is:

- A. Use whichever is cheapest; gear oil type doesn't matter
- B. Always use synthetic oil regardless of vehicle specifications
- C. Always use conventional oil; synthetic doesn't fit older transmissions
- D. Use the gear oil viscosity and type specified by the manufacturer (synthetic or conventional, with specific viscosity and gear oil rating); using the wrong type causes accelerated wear and may void warranty

59. A vehicle's serpentine belt shows minor cracks but is not yet at the manufacturer's wear indicator. The MOST cost-effective advisory is:

- A. Replace the belt immediately as a precaution
- B. Inspect the belt at the manufacturer's specified intervals; replace when cracks meet wear-indicator criteria (typically 3+ cracks per inch in any rib, or 50%+ rib material loss), not before — premature replacement wastes resources
- C. Replace the belt and all pulleys together
- D. Apply belt dressing to extend life

60. A scan tool diagnosis isolates a failed TCC solenoid as the cause of a TCC slip code. The MOST cost-effective repair is:

- A. Replace the entire automatic transmission
- B. Disable the TCC function permanently in the PCM
- C. Replace only the TCC solenoid (requires transmission pan removal), replace the filter and pan gasket, refill with the correct ATF, and verify the slip condition resolves before returning the vehicle
- D. Add transmission additive to mask the symptom

61. A customer has a 4-year-old battery that load-tests at 70% of rated CCA with no symptoms. The MOST appropriate recommendation is:

- A. The battery is functional but degrading; advise the customer of the test results, note that replacement at the next service or before winter is recommended, and let them make an informed decision — proactive replacement avoids no-start in the future
- B. Replace the battery immediately regardless of customer wishes
- C. Add water to the cells (impossible in modern sealed batteries)
- D. Wait until the vehicle won't start before recommending replacement

62. An alternator has 2.5 V ripple voltage (spec <0.5 V) with a missing hump in the scope pattern — a failed diode. The MOST cost-effective repair is:

- A. Add an alternator additive to seal the diode
- B. Continue using the failing alternator until it stops outputting
- C. Rebuild the alternator on the bench during the service
- D. Replace the alternator with a new or quality remanufactured unit, replace the drive belt if at its interval, and verify charging system performance under load — replacement is faster and more reliable than field rebuild

63. A vehicle's HID/LED headlight assembly is yellowed and reduced visibility is reported. The MOST cost-effective repair is:

- A. Replace the entire headlamp assembly immediately
- B. Use household abrasive on the lens
- C. Use a professional headlamp restoration kit (sanding sequence, polish, UV-protective sealer) to remove yellowing and restore clarity at a fraction of replacement cost; appropriate when the lens is intact and not internally damaged

D. Drill ventilation holes in the headlamp assembly

64. A customer's stop-start system has stopped functioning. They ask whether to repair or disable it. The MOST honest advisory is:

A. Disable the stop-start permanently to avoid the issue

B. Diagnose the cause — most stop-start inhibits trace to battery SoC/SoH, accessory load, or sensor inputs — and address the root cause; the system provides 3–8% fuel savings over the vehicle's life and is typically inexpensive to restore

C. Replace the entire battery system unconditionally

D. Reset the BCM to clear all stop-start issues

65. A customer's R-134a A/C system has lost charge multiple times. They ask about retrofitting to R-1234yf. The MOST honest advisory is:

A. R-134a to R-1234yf retrofit is technically possible but requires component changes (PAG oil compatibility, fitting changes, possible compressor/condenser update); cost typically exceeds the cost of diagnosing and fixing the leak on R-134a — recommend leak repair instead

B. Recommend the retrofit because R-1234yf is mandatory

C. Recommend the retrofit because R-1234yf is significantly cheaper

D. Refuse all A/C work on R-134a vehicles

66. A vehicle's A/C blows warm air. The compressor clutch is not engaging when commanded. The MOST cost-effective diagnostic path is:

A. Replace the compressor and clutch assembly immediately

B. Measure refrigerant pressure first (low refrigerant disables the clutch via low pressure cutout), verify the electrical command to the clutch coil, then check coil resistance — isolates the actual cause before parts replacement

C. Add refrigerant without testing

D. Replace the entire A/C system

67. A vehicle's heated seat has failed with an open heating element in the seat cushion. The MOST cost-effective repair is:

A. Replace the entire seat assembly with a new unit

B. Replace the seat with a non-heated unit and bypass the function

C. Add a portable seat heater on top of the existing seat

D. Replace only the heating element (or the seat cushion containing it) per the manufacturer's procedure, restoring function at a fraction of full seat replacement cost

68. A power window won't operate. Diagnosis confirms the window motor has failed. The MOST cost-effective repair is:

A. Replace only the window motor or the regulator-motor assembly (many designs combine both), perform the window initialization procedure, and verify auto-up and pinch protection function

B. Replace the entire door assembly

C. Disable the power window and convert to manual

D. Replace all four window motors at once

69. A vehicle has excessive parasitic draw of 350 mA (spec <80 mA); the customer has been replacing batteries every 6 months. The MOST cost-effective diagnostic is:

- A. Replace the battery again and accept the limitation
- B. Disconnect the battery when the vehicle is parked
- C. Perform a systematic parasitic draw test (current clamp on negative cable, pull fuses one at a time after modules sleep), identify the offending circuit, and repair the root cause — addressing the cause stops the cycle of battery replacement
- D. Install a battery isolator switch

70. A customer wants an aftermarket remote starter installed on their vehicle. The MOST appropriate response is to:

- A. Refuse all aftermarket accessory installations as a policy
- B. Install the cheapest available aftermarket starter
- C. Install the customer's chosen brand without verification
- D. Install only a quality aftermarket starter compatible with the vehicle's immobilizer and CAN bus, with proper installation per the manufacturer's instructions; disclose any warranty implications and ensure the install does not damage existing wiring

71. A vehicle's HVAC has a stuck blend door producing only cool air on MAX HEAT. Diagnosis confirms a failed actuator. The MOST cost-effective repair is:

- A. Replace the entire HVAC case assembly
- B. Replace the heater core as a related component
- C. Replace only the failed blend door actuator (typically accessible from under the dashboard with limited disassembly), perform any required calibration, and verify proper HVAC function
- D. Disable the climate control system

72. A rear window defroster grid has a broken line. The MOST cost-effective repair is:

- A. Replace the entire rear window
- B. Use a conductive paint defroster repair kit (formulated for the application), prepare the surface properly, apply the paint across the break, and allow to cure — restoring function for a few dollars in materials
- C. Apply regular spray paint to bridge the break
- D. Disable the defroster function in the BCM

73. A vehicle's charging voltage is 13.0 V at idle (spec 13.8–14.6 V). The MOST cost-effective diagnostic approach is:

- A. Perform voltage drop tests on the alternator output and ground paths first; often the cause of low charging voltage is a corroded terminal or undersized cable, not the alternator
- B. Replace the alternator immediately
- C. Replace the battery to address the low voltage
- D. Add a battery booster as a permanent solution

74. A vehicle's A/C compressor has internal damage from a long-term low-refrigerant condition. The MOST cost-effective repair is:

- A. Replace only the compressor and ignore other components
- B. Disable the A/C system permanently
- C. Drive the vehicle without A/C
- D. Replace the compressor, the receiver-drier/accumulator (mandatory after contamination), flush the lines/condenser/evaporator, refill with the manufacturer-specified PAG oil quantity, evacuate, and recharge — partial repair contaminates the new compressor and causes repeat failure

75. A customer's vehicle has a slow crank. The battery is 3 years old. The MOST cost-effective diagnostic is:

- A. Replace the battery immediately based on the symptom
- B. Test the battery (conductance test, load test) and check the starter circuit voltage drop before any replacement; the battery may be fine and the slow crank may trace to a corroded connection or cable
- C. Replace the alternator preventively
- D. Replace the starter motor preventively

76. A customer asks about HID/LED replacement bulbs for their halogen headlight. The MOST honest advisory is:

- A. Install any aftermarket HID kit; results are guaranteed
- B. Recommend the cheapest aftermarket option available
- C. Inform the customer that halogen housings are designed for halogen beam patterns; installing HID/LED bulbs in halogen housings produces glare for oncoming traffic, may not improve visibility, and may not be legal — recommend OEM-spec halogen or an OEM retrofit
- D. Decline all headlight modifications

77. A vehicle has reduced airflow from dashboard vents and a musty cabin smell at 50,000 km. The MOST cost-effective repair is:

- A. Replace the cabin air filter (an inexpensive part typically accessible from behind the glove box); a clogged filter is the most common cause of both symptoms at this mileage, and replacement restores function for under \$50
- B. Replace the blower motor as the cause
- C. Replace the HVAC evaporator core

D. Disable the HVAC system

78. A vehicle's driver-side door lock won't respond to remote or switch. Diagnosis confirms a failed actuator. The MOST cost-effective repair is:

A. Replace the entire door assembly

B. Replace only the failed door lock actuator (typically requires door panel removal but not full disassembly), verify proper operation, and reinstall the panel

C. Disable the central locking system

D. Replace both front door actuators as a set

79. A wiring harness has a chafed wire causing intermittent failures. The MOST cost-effective repair is:

A. Replace the entire wiring harness

B. Apply electrical tape over the damaged area only

C. Cut the damaged section and tie new wire ends together without splice connectors

D. Repair using OEM-approved splice connectors or solder-and-heat-shrink methods, then secure the harness so it cannot chafe again — proper repair restores function and is far cheaper than full harness replacement

80. A vehicle's A/C requires recharging once per year. The MOST cost-effective diagnostic approach is:

A. Recharge annually and accept the limitation

B. Replace the entire A/C system preventively

C. Locate the leak source (visual oil residue inspection, UV dye, or electronic leak detector), repair the specific leak point with new O-rings or sealing components, and recharge — addressing the cause stops annual recharging

D. Add stop-leak additive to the refrigerant circuit

81. A vehicle's Intelligent Battery Sensor (IBS) has failed and the charging system is misregulating. The MOST cost-effective repair is:

A. Replace the entire alternator and battery system

B. Disconnect the IBS and let the alternator regulate without sensor input

C. Replace the battery to compensate for the IBS issue

D. Replace only the failed IBS on the negative battery terminal, perform any required calibration, and verify proper charging voltage regulation — significantly cheaper than alternator or battery replacement

82. A power window regulator has failed. The MOST cost-effective repair is:

A. Replace the entire regulator-motor assembly with a quality aftermarket or OEM unit, perform the window initialization procedure, and verify auto-up and pinch protection function correctly

B. Replace the entire door assembly

C. Replace only the broken cable on the regulator

D. Bypass the regulator with a manual crank conversion

83. A battery cable terminal is heavily corroded, increasing the cable's resistance. The MOST cost-effective repair is:

A. Replace the entire battery cable harness

B. Wrap electrical tape around the corroded terminal

C. Replace only the corroded terminal end (typically a separate component crimped or bolted to the cable), clean the cable end, install a new terminal correctly, and apply terminal protectant

D. Apply WD-40 to the corrosion

84. A vehicle's front brake pads are at 30% remaining. Rotors are within thickness spec and have no excessive runout. The MOST honest advisory is:

A. Replace pads and rotors immediately

B. The brakes are functional; pads can be replaced when they reach the wear indicator (typically 20–25% remaining), and rotors can be reused if they remain within spec at that time — premature replacement wastes money

C. Replace the entire braking system

D. Add brake pad shims to extend life

85. A vehicle has a sinking brake pedal with no external leaks. Diagnosis confirms internal master cylinder leakage. The MOST cost-effective repair is:

A. Replace the master cylinder with a quality remanufactured or new unit, bench bleed before installation, and bleed the entire brake system — internal rebuild kits are rarely cost-effective compared to remanufactured replacements

B. Replace the entire braking system

C. Add brake fluid to compensate for the leak

D. Disable the brake booster

86. A vehicle has DTC C0241 (ABS Module Low Voltage). The MOST cost-effective diagnostic approach is:

- A. Replace the ABS module immediately
- B. Replace the wheel speed sensors
- C. Test the battery and charging system, then check voltage at the ABS module connector during operation — low system voltage is a common cause of this code and addressing the supply issue often clears the fault without ABS module replacement
- D. Replace the entire ABS assembly

87. A vehicle's front brake caliper is seized causing brake drag. The MOST cost-effective repair is:

- A. Replace the entire brake system
- B. Apply brake clean to the caliper to free it
- C. Drive the vehicle ignoring the drag
- D. Replace the seized caliper with a remanufactured unit, replace the brake pads on that side (and on the opposite side for symmetric braking), inspect the rotor for heat damage, replace if necessary, and bleed the circuit

88. A vehicle's front strut is leaking. The MOST cost-effective repair approach is:

- A. Replace only the leaking strut
- B. Replace struts in axle pairs (both front struts together), since one worn and one new strut on the same axle produces uneven handling and accelerates wear of the newer component; the moderate additional cost provides matched performance
- C. Replace all four struts together
- D. Disable the strut and convert to non-strut suspension

89. A vehicle has a humming wheel bearing on the right front. The MOST cost-effective repair is:

- A. Replace only the affected wheel bearing assembly, since wheel bearings on opposite wheels are independent and replacing one does not require the other; verify proper torque on the axle nut
- B. Replace both front wheel bearings together
- C. Replace all four wheel bearings
- D. Drive the vehicle ignoring the noise

90. A vehicle has a worn lower ball joint with vertical play. The MOST cost-effective repair is:

- A. Replace the entire steering and suspension system
- B. Apply grease to extend life of the worn joint
- C. Drive the vehicle ignoring the wear
- D. Replace the worn ball joint (or the integrated control arm if the joint is not separately serviceable), inspect related components for similar wear, and perform a wheel alignment after the repair

91. A vehicle has a leaking power steering rack and the fluid is constantly low. The MOST cost-effective repair is:

- A. Add power steering stop-leak additive
- B. Drive the vehicle without power steering assist
- C. Replace the leaking rack with a quality remanufactured or new unit, replace the high-pressure hose (often shows similar age-related wear), flush the system to remove debris, and bleed the system
- D. Replace the entire steering column

92. A vehicle had an alignment done by a previous shop. The customer complains the ESC warning light has stayed on since. The MOST cost-effective fix is:

A. Replace the steering angle sensor

B. Perform the Steering Angle Sensor (SAS) zero-point calibration with the scan tool with wheels straight; the previous shop likely skipped this step after toe adjustment, leaving the SAS reference incorrect — a free fix requiring only the scan tool procedure

C. Replace the ABS module

D. Disconnect the ESC system

93. A customer's front tires have 4/32" tread remaining (legal minimum is 2/32") and the rear tires have 8/32". The MOST cost-effective and safe recommendation is:

A. Plan front tire replacement before they reach the wear indicator (4/32" provides reduced wet weather grip), rotate the new tires to the rear and move the current rear tires to the front for matched wear, and continue the current rotation schedule

B. Replace all four tires immediately regardless of condition

C. Replace only the worst-worn tire

D. Continue driving until the tires reach minimum legal depth

94. A customer has a tire with a nail puncture in the tread area, 5 mm from the sidewall edge. The MOST safety-conscious advisory is:

A. Patch the puncture from outside the tire

B. Apply a tire plug only without removing the tire

C. Replace the tire immediately regardless of damage location

D. Inspect the damage: punctures in the central tread area (not within the sidewall area) can be properly repaired with a patch-plug combination requiring the tire to be removed from the rim; punctures too close to the sidewall must be addressed with tire replacement

95. A customer has a TPMS sensor that has failed at 6 years old; the other three are still working. The MOST cost-effective approach is:

A. Replace all four TPMS sensors immediately

B. Replace only the failed sensor and inform the customer that the remaining sensors are likely near end of service life (5–10 years typical), with options for staggered replacement vs. all-at-once based on the customer's plans — let them decide

C. Disable the TPMS warning light

D. Install valve stems without sensors

96. A customer's vehicle has 90,000 km and original brake fluid that tests at 3.5% moisture content. The MOST cost-effective service is:

A. Flush the brake system with new DOT-rated fluid and re-bleed all four wheels — moisture above 3% lowers boiling point enough to risk vapor lock under heavy braking, and proactive flushing prevents costly ABS modulator failure from aged fluid

B. Add additional brake fluid to dilute the moisture

C. Wait for symptoms before any brake fluid service

D. Add a brake fluid additive to extend life

97. A customer asks whether their vehicle needs an alignment after replacing tires. The MOST honest advisory is:

A. Alignment is required after every tire replacement regardless

B. Alignment is never needed after tire replacement

C. Check the existing alignment specs and tire wear pattern; if the previous tires show abnormal wear or the vehicle has had recent suspension service, alignment is recommended; if not, the customer can decide based on their preference for preventive vs. as-needed alignment

D. Always charge for alignment regardless of necessity

98. A customer has 4-year-old tires with 7/32" tread depth but visible age cracks in the sidewalls. The MOST safety-conscious advisory is:

A. Continue using the tires until tread depth requires replacement

B. Tire age does not affect safety

C. Replace only the worst-cracked tire

D. Tire age affects safety regardless of tread depth — rubber hardens and cracks over time, reducing wet grip and increasing failure risk; recommend tire replacement now (typically 6–10 years is the standard service life), prioritizing safety over tread-life economics

99. A customer's vehicle has worn rear shocks producing cupped tire wear. The MOST cost-effective repair is:

A. Replace all four shocks immediately

B. Replace rear shocks in axle pairs (both rear shocks together) to maintain matched damping, replace the cupped tires if wear is excessive, and recommend rotating the wheels back to match the new shocks' service life

C. Replace only the more-worn rear shock

D. Drive the vehicle and accept the wear pattern

100. After replacing a master cylinder, a vehicle has a soft brake pedal despite repeated bleeding. The MOST cost-effective next step is:

A. Use the scan tool to perform the ABS valve cycling procedure during a second bleed, since trapped air in the ABS modulator cannot be released by standard pedal bleeding — the scan tool ABS bleed often resolves the symptom with minimal additional time

- B. Replace the master cylinder again
- C. Replace the entire ABS assembly
- D. Add a brake fluid additive

101. A vehicle's EPB warning light is on and the parking brake won't release. The MOST cost-effective diagnostic approach is:

- A. Replace the entire EPB system
- B. Disconnect the EPB system permanently
- C. Drive the vehicle ignoring the warning
- D. Read scan tool DTCs for the EPB system (caliper motor faults, switch failures, supply voltage), verify supply voltage and ground at the EPB module, and address the specific cause — root-cause diagnosis is much cheaper than full system replacement

102. A customer reports a steering wheel shimmy at highway speed after their tires were recently rotated and balanced at another shop. The MOST cost-effective approach is:

- A. Replace all four tires immediately
- B. Replace the front wheel bearings
- C. Re-balance the front wheels using dynamic balance (static-only balance leaves couple imbalance that produces shimmy), then road-test to verify resolution; the previous shop likely performed only static balance
- D. Replace the entire suspension system

103. A vehicle has a broken coil spring on the right rear. The MOST appropriate repair is:

- A. Replace only the broken spring
- B. Replace coil springs in axle pairs (both rear springs together) to maintain ride height symmetry and matched stiffness; one new spring with one worn spring produces lean and uneven handling
- C. Drive the vehicle with the broken spring
- D. Replace all four springs unconditionally

104. A customer wants the shop to install used tires they purchased. The MOST appropriate response is to:

- A. Inspect the used tires for tread depth, age (DOT date code), sidewall cracks, repair history, and bead damage — if the tires meet safety standards, mount them and inform the customer of any concerns documented at install; refuse to install tires that fail safety inspection
- B. Refuse all used tire installations as a policy
- C. Install the tires without any safety inspection
- D. Charge double labor for used tire installation

105. A vehicle has a leaking rear drum brake wheel cylinder. The MOST cost-effective repair is:

- A. Replace the entire rear axle assembly
- B. Add stop-leak additive to the brake fluid
- C. Replace the leaking wheel cylinder, inspect the brake shoes for fluid contamination (replace if soaked), inspect the drum surface, bleed the brake system, and verify proper function — partial repair is much cheaper than full axle service
- D. Disable the rear brakes

106. A new TPMS sensor has been installed. The MOST cost-effective final step is to:

- A. Drive the vehicle for 100 km to allow automatic learning
- B. Replace the BCM to ensure compatibility
- C. Disconnect the battery for 30 minutes
- D. Use the TPMS activation tool to register the new sensor's ID to the BCM following the manufacturer's relearn sequence — without this step, the vehicle may show a TPMS warning that requires a costly callback for the simple programming step

107. A vehicle has an illuminated airbag warning. Scan tool reads B0021 (Driver Airbag Squib Loop Open). The MOST cost-effective diagnostic approach is:

- A. Inspect the clock spring (steering wheel rotary connector) — a common cause is a worn or off-center clock spring; replacing only the clock spring restores the squib circuit at a fraction of full airbag system service
- B. Replace the entire driver airbag system
- C. Replace the SRS module immediately
- D. Disconnect the airbag system

108. A vehicle has been in a frontal collision. The driver pretensioner has deployed. The MOST appropriate repair approach is:

- A. Reset the pretensioner and reuse it
- B. Replace the entire seat belt assembly including the pretensioner, since pretensioners are single-use pyrotechnic devices; replacement of the assembly is the only safe and code-compliant option
- C. Replace only the seat belt webbing
- D. Disable the pretensioner

109. A body panel requires replacement after a minor collision. The MOST cost-effective approach using OEM procedures is to:

- A. Replace the entire body section
- B. Substitute panel bonding for welding without verification
- C. Follow the manufacturer's published procedure for the specific panel — some require welding, others panel bonding, others mechanical fasteners — each method is engineered for the panel's structural and crash-energy role, and substituting compromises crashworthiness
- D. Skip the panel replacement entirely

110. A customer reports water in the cabin after rain. The vehicle has a sunroof. The MOST cost-effective diagnostic approach is:

- A. Replace the sunroof seal
- B. Replace the entire sunroof assembly
- C. Apply silicone sealant to all visible seams
- D. Inspect the sunroof drain tubes for blockage at the tube outlets (typically behind the front fender liners or under the vehicle); cleaning the blocked drains restores function for under \$100, while replacing a sunroof costs hundreds to over a thousand dollars

111. A vehicle's clock spring has failed (horn and airbag warning). The MOST cost-effective repair is:

- A. Replace the entire steering column assembly
- B. Replace only the clock spring (steering wheel rotary connector), follow the manufacturer's removal/installation procedure, and verify all clock spring functions — horn, airbag, cruise control, steering wheel controls
- C. Disable the horn and airbag functions

D. Replace the steering wheel entirely

112. A vehicle's frontal collision repair includes inspection of the crash sensors. The MOST cost-effective approach is:

A. Inspect each crash sensor for damage (most are externally accessible) and replace only those showing visible damage or failing self-tests in the SRS module; preventive replacement of intact sensors is wasteful

B. Replace all crash sensors regardless of condition

C. Skip sensor inspection during repair

D. Disable the SRS system to avoid sensor concerns

113. A customer's exterior mirror with integrated functions (memory, blind spot, auto-dim, heating) has been broken. The MOST cost-effective repair is:

A. Replace the entire door assembly

B. Use a basic mirror replacement with no integrated functions

C. Disable all the integrated functions

D. Replace with an OEM (or quality OEM-equivalent) integrated mirror, configure through the scan tool to enable memory positions, blind spot zones, auto-dim, and other features, and verify all integrated functions

114. A vehicle has a minor (1 cm) dent in a body panel from a parking incident. The MOST appropriate recommendation is:

A. Replace the entire panel immediately

B. Apply touch-up paint and accept the dent

C. Use paintless dent repair (PDR) if the paint is intact — this restores the panel for a fraction of body shop cost; if paint is broken, conventional dent repair with paint is required, but PDR remains cheapest for paint-intact dents

D. Drive the vehicle ignoring the dent

115. A customer's seat belt webbing has visible fraying near the buckle. The MOST safety-conscious advisory is:

A. Trim the frayed area and continue using the belt

B. Replace the entire seat belt assembly — frayed webbing may fail under crash load, and seat belt assemblies cannot be repaired; replacement is the only safe option, and the cost is far less than the consequences of a failed belt

C. Apply duct tape to reinforce the frayed area

D. Disconnect the seat belt to avoid the issue

116. A power window regulator has broken cables. The MOST cost-effective repair is:

A. Replace only the failed regulator assembly (or the cables if separately serviceable), perform the window initialization procedure, and verify auto-up and pinch protection

B. Replace the entire door assembly

C. Replace the window motor only without addressing the cables

D. Disable the power window function

117. A hybrid vehicle has reduced battery capacity and the customer is considering options. The MOST honest advisory is:

A. Replace the entire vehicle to avoid the issue

B. Replace the HV battery with a salvage unit immediately

C. Provide options: (1) HV battery replacement with new or remanufactured OEM (most expensive, longest life), (2) HV battery rebuild/refurbishment (moderate cost), (3) individual cell module replacement if only a few are degraded (lowest immediate cost) — let the customer choose based on vehicle value and plans

D. Disable the HV system

118. A hybrid vehicle has an HV cable that has been damaged. The MOST cost-effective repair is:

A. Splice the cable with regular wire

B. Apply electrical tape over the damaged area

C. Drive the vehicle ignoring the damage

D. Replace the entire HV cable assembly with an OEM replacement (HV cables are not field-spliceable due to safety and certification requirements), perform insulation resistance testing before reconnection with a megger at the specified voltage, and follow the OEM de-energize/re-energize procedure

119. A customer's hybrid HV battery has one degraded cell module. The MOST cost-effective repair approach is:

A. Replace only the degraded cell module (if the manufacturer's procedure supports module-level replacement), perform balancing of all modules, and verify pack performance — module-level replacement is significantly cheaper than full pack replacement when supported

B. Replace the entire HV battery pack

C. Drive the vehicle until full battery failure

D. Disable the HV system

120. An EV's charging port has been damaged. The MOST cost-effective repair is:

- A. Replace the entire EV
- B. Replace only the damaged charging port assembly (most are modular and replaceable), verify proper signal integrity (CP, PP, ground), and test charging functionality with both AC Level 2 and DC fast charging if applicable
- C. Disable the charging function
- D. Apply tape over the damaged port

121. A shop is preparing to perform HV service. The MOST cost-effective approach to required HV PPE is to:

- A. Use any electrical insulating gloves available in the shop
- B. Skip HV PPE if the technician is experienced
- C. Use only Class 0 gloves without leather protectors
- D. Invest in Class 0 (1000 V) HV rubber gloves with leather protector outers, a Cat III/IV-rated multimeter, an insulation tester (megger), and proper training — the equipment investment is a fraction of liability exposure from improper service

122. A hybrid vehicle's BMS has failed; the HV battery is functioning but not reporting accurate data. The MOST cost-effective repair is:

- A. Replace the entire HV battery pack
- B. Disable the BMS and ignore the data
- C. Replace only the failed BMS controller (if separately serviceable on this vehicle), perform the manufacturer's programming/calibration procedure, and verify all HV battery data reports correctly — BMS replacement alone is significantly cheaper than full pack replacement
- D. Disable the HV system

123. A hybrid vehicle's HV battery cooling system has a failed electric coolant pump. The MOST cost-effective repair is:

- A. Replace only the failed electric coolant pump with an OEM replacement, refill with the manufacturer-specified low-conductivity coolant, bleed air from the loop, and verify proper pump operation through the scan tool — addressing the specific failed component is far cheaper than broader system service
- B. Replace the entire HV battery pack
- C. Drive the vehicle without HV battery cooling
- D. Replace the inverter and motor cooling system

124. A shop's HV insulating gloves have been used for 6 months. The MOST cost-effective approach is:

- A. Replace the gloves immediately as a precaution
- B. Perform the regular pre-use inspection (visual check for cracks/tears/contamination, roll-and-trap air test for leaks) before each use, and replace only when defects are found or the gloves reach their published service life; the gloves remain safe and effective if they pass inspection
- C. Discard the gloves regardless of condition
- D. Use the gloves without any inspection to save time

125. A customer reports significant EV range loss in winter. The MOST honest advisory is:

- A. Replace the HV battery immediately
- B. The vehicle is defective and must be replaced
- C. Drive the vehicle less in cold weather
- D. Cold-weather range loss is normal physical behavior — lithium-ion chemistry has reduced efficiency in cold temperatures, cabin heating draws additional energy, and regen acceptance is reduced; explain

the cause and offer mitigation strategies (preconditioning while plugged in, using seat/wheel heat rather than cabin heat, ensuring tire pressure) rather than recommending unnecessary parts replacement

## Practice Exam 15: Answer Key and Explanations

1. C — A brief brake inspection costs minimal time and converts an open-ended complaint into a verified diagnosis. Brake noise can come from worn pads, glazed rotors, rust on rotor edges, or stuck hardware, each with a different repair scope, so an accurate quote requires visual measurement before any commitment.
2. A — PPE for grinding addresses multiple simultaneous hazards: projectile, particulate, noise, and vibration. The equipment is shop-provided and donning it takes seconds, while a single grinding-related injury costs far more in downtime, claims, and medical care than the time saved by skipping it.
3. B — WHMIS regulations require all controlled products to be properly labeled and accompanied by an SDS before workplace use. An unlabeled product cannot be verified for safe handling, storage, or disposal, so refusing to use it protects the shop, technicians, and the customer from unknown risks.
4. D — Provincial consumer protection law requires written or recorded authorization before exceeding an estimate by a material amount. Completing unauthorized work can make the additional charges legally non-collectible and exposes the shop to disputes that the documentation would otherwise prevent.
5. A — Direct pressure with elevation is the universal first response for moderate external bleeding; it controls blood loss until the body's clotting mechanisms take over or professional care arrives. Tourniquets are reserved for severe limb hemorrhage that direct pressure cannot control, and shop solvents would worsen the wound.
6. C — Only certified technicians are covered by the shop's workplace insurance and liability protection. Allowing customer participation creates uninsured liability for any injury and violates the certified-trade requirements that govern automotive work in regulated provinces.
7. D — Engaging mechanical safety locks, applying personal lockout/tagout, and documenting in the shop log protects the vehicle from accidental operation and other technicians from inadvertent exposure.

The hoist is designed for safe extended elevation when its locks are engaged, so this is both safe and avoids the time loss of lowering and re-lifting.

8. B — Honest acknowledgment, a realistic new completion time, and reasonable accommodation address the customer's actual concern (the delay's impact on their schedule). Blaming suppliers or offering refunds without communication damages trust; transparent communication preserves the relationship and often results in repeat business.

9. C — Provincial OHS regulations permit working alone only when a written procedure, scheduled check-ins, and a designated contact are in place. The procedure ensures that if the technician is injured or incapacitated, someone will recognize the missed check-in within a short window and summon help.

10. A — Repair cost under 50% of market value with the rest of the vehicle in good condition makes the head gasket repair financially sound. A properly performed head gasket repair restores the engine to many more years of service, while replacement at this point would require the customer to spend significantly more on a different vehicle.

11. D — Manufacturer service intervals balance failure risk against premature replacement cost; thermostats typically last beyond a single service interval when no symptoms exist. Replacing without symptoms or interval requirement wastes resources without reducing failure risk, so routine inspection at scheduled services is the correct approach.

12. B — Swapping the coil from one cylinder to another and observing whether the misfire follows the coil is a definitive isolation test. If the misfire moves to the new cylinder, the coil is the failed component, allowing replacement of one coil instead of speculative replacement of multiple parts.

13. A — Professional injector cleaning runs a pressurized cleaning solution through the rail and injectors while the engine operates, dissolving carbon deposits without disassembly. The service typically costs 10% of injector replacement and resolves most port-injection clogging cases, making it the natural first attempt before parts replacement.

14. C — UV dye in the engine oil with a UV light identifies the leak source precisely after the engine reaches operating temperature. The visible dye trail isolates the actual seal, gasket, or component leaking, preventing the expensive guesswork of replacing multiple seals based on suspicion.

15. B — On interference engines, timing belt failure causes valves to contact pistons, destroying the engine. The vehicle is past the time-based interval (7 years) regardless of mileage, and waiting for the mileage trigger exposes the customer to catastrophic engine damage; the water pump and tensioner are replaced together because they share the same service window.

16. D — Cylinder 3 has badly worn rings (wet test confirmed by significant pressure recovery), indicating fundamental engine wear rather than a fixable single fault. Transparent presentation of rebuild or replacement quotes relative to vehicle value lets the customer make a financial decision rather than accepting a partial repair that won't last.

17. A — Replacing the failed pump, integrated filter, and inspecting the tank for contamination addresses the root cause of the no-start. Pump motor swaps and external pump bypasses create unreliable repairs that often fail again or fail safety/emissions inspection, so the proper full assembly replacement is the more durable repair.

18. C — Disabling EVAP monitoring violates emissions regulations and prevents passing safety/emissions inspection in many jurisdictions. The customer needs honest information about the consequences before deciding; many will choose the repair once they understand the inspection implications and the MIL will return.

19. B — Spark plug performance depends on matching the manufacturer's specification (heat range, gap, electrode material), not on marketing-driven "premium" claims. OEM-equivalent plugs at the recommended interval are typically the best value because they meet the engineering requirement without paying for unverified premium features.

20. D — Modern coolants have specific service intervals (often 80,000–160,000 km depending on chemistry). Aged coolant loses corrosion inhibition and pH buffering, leading to radiator, water pump, and heater core damage that costs many times the routine coolant service — the deferral saves nothing in the long run.

21. C — Locating the leak with a smoke machine and replacing only the failed gasket or hose addresses the root cause with minimum parts cost. Disabling monitors hides the problem while leaving unmetered air entering the engine, which continues to affect fuel trim and may cause downstream damage.

22. C — Knock sensor codes commonly trace to wiring or connector damage; verifying these before replacing the sensor avoids unnecessary parts replacement. If the wiring is intact and resistance is out of spec, only the sensor is replaced — far cheaper than blanket sensor or PCM replacement.

23. D — The heater circuit code identifies a specific failed component: the upstream O2 sensor's heater element. Targeted replacement of the failed sensor (with confirmed voltage and resistance testing) addresses the code without replacing functional downstream sensors or unrelated exhaust components.

24. B — Honest communication about catalyst aging, emissions compliance, and the consequences of continued operation respects the customer's right to make an informed decision. Disabling the monitor hides the symptom but leaves the vehicle non-compliant and may damage a future catalyst if active misfires continue.

25. A — Replacing the turbo with a quality remanufactured or new unit while addressing the failure root cause (oil filter, oil cooler, debris) prevents repeat failure. Oil and filter replacement removes contamination from the failed turbo, protecting the new unit; partial repairs like impeller-only replacement leave the bearing surfaces compromised.

26. D — Mechanical cleaning of the EGR valve and passages restores function for a fraction of full system replacement when the valve itself is mechanically sound. If cleaning fails or the valve is genuinely failed, only the valve is replaced — addressing the actual fault rather than replacing the entire intake.

27. C — A PCV valve is an inexpensive part; replacement plus inspection of the grommet and hose addresses the lean condition at minimal cost. Disabling the PCV system creates emissions and crankcase pressure issues, while engine replacement is wildly excessive for a stuck valve.

28. B — A stretched timing chain accompanies a failing tensioner; replacing one component while leaving the worn others to fail soon results in a second teardown. Replacing the chain, guides, tensioner, and related components per the manufacturer's kit restores reliability for the chain system's full service life.

29. A — A confirmed head gasket failure on a high-cost repair requires honest financial comparison against vehicle market value. Quoting the proper repair (including required machining and new fasteners) lets the customer choose between repair and replacement based on real numbers rather than additives that mask the symptom.

30. D — Major engine failures on mid-value vehicles present multiple legitimate paths: factory-quality rebuild with warranty, used engine at lower cost without warranty, or vehicle replacement. The technician's role is to present all options transparently and let the customer make the financial decision that fits their priorities.

31. C — Inspecting and documenting the used engine's as-received condition before installation protects both the shop and the customer. The customer accepts the inherent warranty limitation on used parts after the inspection, and photo documentation prevents disputes if the engine fails shortly after installation.

32. B — A DMM resistance check across CAN-H to CAN-L is a non-invasive test that often reveals the root cause within minutes.  $60\ \Omega$  confirms two healthy terminators in parallel; other readings indicate broken bus wiring, missing terminators, or shorts, all of which redirect diagnosis efficiently before any parts replacement.

33. A — A J2534 pass-through device, OEM software subscription, and battery support charger enable an independent shop to perform manufacturer reprogramming without dealer dependency. The capital investment is modest compared to the revenue captured from in-house programming and TSB compliance work.

34. D — Direct, transparent conversation about the typical 5–10 year TPMS sensor service life lets the customer choose between staggered replacement (lower immediate cost, future callbacks) and all-at-once replacement (higher cost now, no near-term callback). The customer's plans for the vehicle drive the right choice; the technician's role is to enable an informed decision.

35. B — A new OEM (or OEM-equivalent) BCM with warranty avoids the compatibility, programming, and reliability problems of salvage modules. Programming the new module with VIN and option data restores all features correctly, and the warranty protects against repeat failure.

36. C — Verifying module power and ground before suspecting the bus or the module itself catches the simplest fault first. A module without supply cannot communicate regardless of bus condition, so the systematic approach prevents wasted hours and unnecessary parts replacement.

37. A — An enhanced scan tool's bidirectional commands, full data PIDs, module configuration, and reprogramming capability pay for themselves through reduced dealer referrals, faster diagnostics, and

access to manufacturer-specific DTCs that generic tools cannot read. The capital cost is recovered quickly in a full-service shop.

38. D — Module recovery procedures (boot-mode recovery flash) succeed in most failed-flash cases when properly attempted with stable battery support. Immediate module replacement is the last resort, and applying voltage or disconnecting the battery can compound the failure rather than recovering it.

39. B — TSB and recall searches turn intermittent or hard-to-reproduce symptoms into documented procedures the manufacturer has already isolated. Following the TSB often resolves the symptom in a fraction of the time of open-ended diagnosis, capturing the manufacturer's engineering investment for the technician's time.

40. C — Secure portal registration (AutoAuth or equivalent) authorizes the shop to perform reprogramming on FCA security-gateway vehicles through the standard J2534 process. Bypassing the gateway is not permitted and is detectable; refusing the work means losing the revenue to dealers.

41. A — Used PCMs are typically VIN-locked to the original vehicle and either won't function on a different vehicle or require specialized reprogramming whose cost exceeds the savings. Honest communication about this technical reality prevents wasted labor and customer frustration, and points to the OEM-new or factory-reflashed option that actually works.

42. D — When specific module pairs lose communication while others work, the gateway module's routing/translation function is likely involved. Scan tool data identifies which messages are missing, and verifying gateway operation before replacement isolates the cause rather than guessing at module replacements.

43. B — Marginal supply voltage produces many intermittent electrical symptoms across modules and systems. Ruling out battery condition, charging system output, and parasitic draw at the start of diagnosis takes minutes and prevents hours of chasing symptoms that disappear once power is corrected.

44. A — Replacing the clutch as a complete kit (disc, pressure plate, throw-out bearing, pilot bearing) plus flywheel service addresses the entire clutch system at one teardown. Replacing only the disc leaves the other worn components to fail soon, requiring a second labor-intensive teardown.

45. C — Prompt CV boot replacement with cleaning and repacking saves the CV joint when caught before contamination damages the joint surfaces. The repair is significantly cheaper than full axle replacement after the joint fails from grease loss and dirt intrusion.

46. D — Manufacturer differential service intervals balance fluid life against pinion and ring gear protection. Drain-and-refill with the specified gear oil and friction modifier (when limited-slip) preserves the bearing and gear surfaces; neglected service eventually leads to expensive ring-and-pinion replacement.

47. B — Some manufacturers specify drain-and-refill (replacing 30–50% of fluid), while others approve power flush. Aggressive power flushing on a transmission with significant accumulated debris can dislodge particles and cause shifting issues, so the manufacturer's recommendation drives the right service for the specific transmission.

48. A — Minor surface rust on U-joint caps is not a service trigger; the joints are sealed and surface rust does not affect function. Inspecting at each service interval and replacing only when looseness, roughness, or torn seals appear preserves resources for actual repairs.

49. C — CVT fluid uses specific additives matched to the belt and pulley materials; degraded fluid accelerates belt and pulley wear, leading to expensive CVT replacement. Service at the manufacturer's interval with the manufacturer-specified CVT fluid (not generic ATF) significantly extends transmission life.

50. D — Transfer case fluid inspection reveals water contamination, metal particles, or burnt smell that signal internal issues. The service cost is far less than the damage from neglected fluid (chain wear, bearing damage, internal scoring), so periodic service is a strong long-term value.

51. B — Master cylinder replacement with quality remanufactured or new unit, plus bleeding the slave, is the standard repair on modern designs. Internal rebuild kits are rarely cost-effective compared to the assembled replacement, and spilled brake fluid must be cleaned from any surfaces it contacts to prevent paint damage.

52. C — Specific diagnosis (3rd gear synchronizer wear) followed by targeted repair (replace only the affected synchronizer ring and inspect related components) costs a fraction of transmission replacement. Partial repair is the correct approach when the fault is isolated to a single component within an otherwise healthy transmission.

53. A — AWD coupling fluid carries clutch material and degrades with use; neglected fluid wears the clutch packs and leads to expensive coupling replacement. Periodic drain-and-replace with manufacturer-specified fluid is a small investment that prevents major coupling expenses.

54. D — Pinion seal replacement with proper preload preservation (marking the nut, counting rotations) and yoke inspection restores function at a fraction of differential replacement cost. The technique is well-established and avoids the dramatic cost of full differential service when only the seal has failed.

55. B — Driveshaft re-balancing on chassis dyno equipment addresses the actual fault (lost weights) at much lower cost than driveshaft replacement. Random weight additions without proper balancing equipment cannot achieve the precision needed to eliminate the vibration at highway speed.

56. A — TCC slip indicates wearing friction surface; the transmission can function short-term but slip progresses toward overheating and eventual replacement. Transparent communication about the trajectory lets the customer plan financially rather than discovering the issue at total failure.

57. C — Scan tool data identifies the inhibit conditions causing intermittent AWD coupling codes (wheel speed difference, coupling current, fluid temperature). Verifying coupling fluid condition before parts replacement often reveals the root cause without expensive system replacement.

58. D — Gear oil viscosity and type are matched by the manufacturer to the transmission's gear and synchronizer materials. Using a different type voids warranty and accelerates wear; the manufacturer's specification — synthetic or conventional, with specific viscosity and rating — is the correct choice.

59. B — Belt wear-indicator criteria (3+ cracks per inch in any rib, 50%+ rib loss) tell the technician objectively when replacement is needed. Replacing belts prematurely on minor cracking wastes resources without reducing risk; following the criteria captures the belt's remaining service life.

60. C — Targeted TCC solenoid replacement with filter and pan gasket service addresses the specific failed component at a fraction of transmission replacement. Disabling the TCC permanently in the PCM eliminates fuel-economy benefit and is a poor solution when the repair is straightforward.

61. A — A degrading battery with 70% capacity and no symptoms can be replaced proactively before failing or operated to symptom-onset based on customer preference. Transparent test results and the

technician's recommendation enable an informed decision; immediate replacement isn't required, but planning before winter or next service avoids no-start.

62. D — Alternator replacement with a new or quality remanufactured unit is faster and more reliable than field rebuild for a failed-diode condition. Replacing the drive belt at its interval combines services and verifying performance under load confirms the repair before customer delivery.

63. C — Headlamp restoration kits (sand-polish-seal sequence) restore lens clarity for a fraction of headlamp assembly cost when the lens is intact. The procedure removes yellowed surface material and applies UV protection, addressing the visibility concern without expensive parts replacement.

64. B — Stop-start inhibits trace to battery SoC/SoH, accessory load, sensor inputs, or temperature ranges; root-cause diagnosis restores 3–8% fuel savings over the vehicle's life. Disabling the system loses ongoing fuel savings and is typically unnecessary once the actual inhibit is addressed.

65. A — R-134a to R-1234yf retrofit requires component changes (PAG oil compatibility, fitting changes, sometimes compressor and condenser updates) that exceed the cost of properly fixing the leak on the existing R-134a system. The leak repair addresses the actual problem at significantly lower cost.

66. B — Measuring refrigerant pressure first rules out the low-pressure cutout as the cause of non-engagement, before condemning the clutch coil or compressor. Verifying electrical command and coil resistance then isolates the specific failed component, saving the cost of speculative compressor replacement.

67. D — Heating element replacement (or cushion replacement if not separately serviceable) restores function at a fraction of full seat cost. Some elements are individually serviceable; others require the cushion — either path is cheaper than replacing the entire seat assembly.

68. A — Targeted window motor (or regulator-motor assembly) replacement with initialization procedure restores window function at component-level cost. The procedure teaches the BCM the new motor's normal current, enabling auto-up and pinch protection to function correctly.

69. C — Systematic parasitic draw testing (current clamp, fuse-pull-with-meter, root-cause identification) finds the actual cause of repeated battery failure. Replacing batteries without addressing the draw is wasteful; fixing the offending circuit stops the cycle permanently.

70. D — Quality aftermarket remote starters compatible with the vehicle's immobilizer and CAN bus deliver reliable function when properly installed. Disclosure of warranty implications and clean installation that doesn't damage existing wiring protect both the customer and the shop from future issues.

71. C — Blend door actuator replacement (typically accessible from under the dashboard) restores HVAC function at component-level cost. The actuator with calibration procedure addresses the specific failure mode without the dramatic cost of HVAC case replacement.

72. B — Conductive paint defroster repair kits restore broken grid lines at a few dollars in materials. Surface preparation, masking, paint application, and full cure produce a permanent repair without the expense of rear window replacement.

73. A — Voltage drop testing identifies whether low charging voltage traces to a corroded terminal or undersized cable rather than the alternator itself. The test takes minutes and prevents unnecessary alternator replacement; many low-voltage cases resolve with terminal or cable repair.

74. D — A compressor failure from refrigerant starvation contaminates the entire system with metal debris and degraded oil. Replacing the compressor, receiver-drier/accumulator, flushing the lines and components, refilling oil to specification, and properly evacuating and recharging prevents new compressor failure from residual contamination.

75. B — Battery and starter-circuit voltage drop tests verify whether slow cranking is battery, cable, or starter related. Many slow cranks trace to corroded terminals or cables; battery replacement without testing wastes resources when the actual fault is elsewhere in the cranking circuit.

76. C — Halogen housings are engineered for halogen bulb beam patterns; HID/LED bulbs in halogen housings scatter light, creating glare for oncoming traffic without improving visibility. The proper recommendation is OEM-spec halogen replacements or an OEM retrofit when available — preserving safety and legal compliance.

77. A — Cabin air filter replacement at 50,000 km addresses both reduced airflow and musty odor with a single inexpensive part. The filter is typically behind the glove box and accessible without tools; restoring function for under \$50 makes this the obvious first step.

78. B — Door lock actuator replacement (requires door panel removal but not full disassembly) addresses the specific failure at component-level cost. Door assembly replacement is dramatically more expensive and entirely unnecessary for a failed actuator.

79. D — OEM-approved splice connectors or solder-and-heat-shrink methods, combined with proper harness routing to prevent re-chafing, restore function for the cost of a few connectors. Tape over the damage is temporary; full harness replacement is wildly excessive for a single chafed wire.

80. C — Locating the leak with visual inspection, UV dye, or electronic leak detector and repairing the specific leak point (typically O-rings or sealing components) stops the cycle of annual recharges. Recharging without repair is a recurring cost that exceeds the diagnostic and repair cost within a few years.

81. D — Replacing the IBS sensor on the negative battery terminal with proper calibration restores correct charging system regulation at a fraction of alternator or battery replacement cost. The IBS is a discrete component, and replacing it specifically resolves the regulation issue.

82. A — Regulator-motor assembly replacement with initialization restores all window functions at component-level cost. Door replacement is unnecessary; cable-only replacement isn't always possible on integrated designs; manual conversion isn't appropriate for a modern vehicle.

83. C — Replacing only the corroded terminal end (a separate crimped or bolted component on most cables) restores low-resistance contact at minimal cost. Full cable replacement is unnecessary when the cable itself is intact, and tape or WD-40 do not address the underlying resistance issue.

84. B — Brake pads at 30% remaining are functional and not yet at the wear indicator; replacement before the indicator wastes the remaining material. Honest communication about the actual wear status preserves customer trust and avoids the appearance of unnecessary upselling.

85. A — Master cylinder replacement with bench bleeding and full system bleed is the standard repair for internal seal failure on modern designs. Remanufactured master cylinders restore function at far less cost than rebuilding in-place, and bench bleeding prevents the time loss of trying to bleed air through the entire system afterward.

86. C — ABS Module Low Voltage codes commonly trace to weak batteries, low charging output, or excessive voltage drops in the ABS supply. Testing the supply system before replacing the module addresses the actual cause and avoids expensive module replacement when the fault is upstream.

87. D — Caliper replacement with new pads (on both sides for symmetric braking), rotor inspection, and bleeding restores the brake system to safe condition. Partial repairs leave the vehicle unsafe; caliper replacement on a seized unit is the proper fix because internal rebuild rarely achieves the reliability of a quality remanufactured unit.

88. B — Strut replacement in axle pairs maintains matched damping and handling balance across the axle. Replacing only the leaking strut produces uneven handling, wears the new strut against the worn opposite side, and shortens the new strut's service life; the modest additional cost preserves performance.

89. A — Wheel bearings on opposite wheels are independent components and don't require paired replacement. Targeted replacement of the affected bearing with proper axle nut torque restores function without the cost of unnecessary parts on the opposite side.

90. D — Ball joint replacement (or integrated control arm replacement if not separately serviceable) with inspection of related components and post-repair alignment addresses the specific failure correctly. Other related wear is identified and addressed proactively, and alignment after the repair prevents tire wear from any change in geometry.

91. C — Power steering rack replacement (quality remanufactured or new) with high-pressure hose, system flush, and bleed restores reliable power steering at a fair cost. The high-pressure hose often shows similar age-related wear and is replaced as a related service to prevent near-term re-leak.

92. B — SAS zero-point calibration after alignment is a scan tool procedure that takes minutes and resolves the ESC warning that the previous shop left active. The fix costs essentially nothing in parts and respects the customer's investment in the previous alignment.

93. A — Planning front tire replacement at or before the wear indicator preserves wet-weather grip and allows rotation strategy to balance front and rear wear. The 4/32" point reduces wet grip enough to warrant action before legal minimum is reached, and rotating new tires to the rear provides better stability.

94. D — Repairable punctures must be in the central tread area, away from the sidewall, and tire removal allows internal patch-plug repair (not external plugging alone). Punctures too close to the sidewall require replacement because sidewall flex compromises patches; the inspection determines which approach is appropriate.

95. B — Replacing only the failed sensor with honest communication about the remaining sensors' service life enables customer choice. Some customers prefer staggered replacement (lower immediate cost); others prefer all-at-once to avoid near-term callbacks — both are valid based on the customer's plans.

96. A — Moisture above 3% reduces brake fluid boiling point enough to risk vapor lock under heavy braking, and aged fluid damages the ABS modulator. Proactive flushing at this moisture level is preventive maintenance that costs a fraction of ABS modulator replacement.

97. C — Alignment after tire replacement depends on the existing alignment status and tire wear pattern; not every tire replacement requires alignment, and not every alignment is unnecessary. Checking the specifications and wear pattern gives the customer accurate information to decide.

98. D — Tire age affects safety independent of tread depth; rubber hardens and cracks over time, reducing wet grip and increasing failure risk. The 6–10 year standard service life prioritizes safety over tread-life economics, and visible sidewall cracking is a clear safety trigger regardless of tread depth.

99. B — Rear shocks are replaced in axle pairs to maintain matched damping. Cupped tires from worn shocks may need replacement if wear is excessive; rotating wheels to match the new shocks' service life optimizes overall tire and shock life.

100. A — Scan tool ABS valve cycling during a second bleed releases air trapped in the ABS modulator that pedal-only bleeding cannot reach. The procedure takes minutes and resolves the spongy pedal that often appears after master cylinder service.

101. D — EPB DTCs identify the specific fault (caliper motor, switch, supply voltage); root-cause diagnosis avoids expensive system replacement. Verifying supply and ground at the EPB module is the first non-invasive step, and the actual cause is usually addressable at component level.

102. C — Dynamic balance corrects both static and couple imbalance; static-only balance leaves couple imbalance that produces highway-speed shimmy. Re-balancing dynamically addresses the actual cause and resolves the customer complaint at modest cost compared to component replacement.

103. B — Coil springs in axle pairs maintain ride height symmetry and matched stiffness; one new and one worn spring on the same axle produces lean and uneven handling. The modest additional cost preserves the vehicle's intended handling characteristics.

104. A — Inspecting used tires for tread, age, sidewall, repair history, and bead damage protects both customer and shop from liability while allowing the customer to use their parts. Refusing the work loses the business; installing without inspection exposes the shop to safety liability.

105. C — Wheel cylinder replacement with shoe inspection (replace if contaminated), drum inspection, and bleeding addresses the brake fluid leak at component-level cost. Partial repair is the appropriate scope when the rest of the rear brake system is functional and uncontaminated.

106. D — TPMS sensor registration with the activation tool completes the installation and avoids the customer callback for a TPMS warning. The relearn procedure takes minutes and prevents the cost of a return visit to address an incomplete installation.

107. A — Clock spring replacement is a common cause of squib loop opens after steering wheel service and is far less expensive than full airbag system replacement. Inspecting the clock spring first is the cost-effective starting point before any module-level investigation.

108. B — Pretensioners are single-use pyrotechnic devices and cannot be reset or refurbished; safe replacement requires the complete seat belt assembly. The replacement is the only code-compliant repair after deployment and ensures the system will fire correctly in a subsequent collision.

109. C — Manufacturer-specified joining methods (welding, panel bonding, mechanical fasteners) are engineered for each panel's structural and crash-energy management role. Substituting joining methods

compromises crashworthiness in a future collision, so following the published OEM procedure preserves the engineered safety performance.

110. D — Sunroof drain tube blockage is the most common cause of cabin water ingress on sunroof-equipped vehicles, and cleaning the blocked drains restores function for under \$100. Replacing sunroof seals or assemblies costs many times more and is rarely the actual fault.

111. B — Clock spring replacement following the manufacturer's procedure restores horn, airbag, cruise control, and steering wheel control functions at component cost. Steering column or wheel replacement is unnecessary for a failed clock spring, which is the actual fault.

112. A — Crash sensor inspection identifies damaged or failed units for targeted replacement; preventive replacement of intact sensors wastes resources. Most crash sensors are externally accessible for visual inspection, and the SRS module's self-tests identify electrical faults — together these confirm which sensors actually need replacement.

113. D — Integrated mirror replacement with OEM (or quality OEM-equivalent) parts and scan tool configuration restores memory, blind spot, auto-dim, and other features fully. Settling for a basic mirror or disabling features compromises the customer's investment in the original vehicle features.

114. C — Paintless dent repair restores paint-intact dents for a fraction of body shop cost; it's appropriate for minor dents with intact paint, like parking lot impacts. The technique preserves the original paint and avoids the time and cost of conventional body repair when the damage permits.

115. B — Frayed seat belt webbing may fail under crash load, and seat belt assemblies are designed as single units that cannot be repaired. Replacement is the only safety-compliant option; the cost of a new assembly is trivial compared to the consequences of a failed belt in a collision.

116. A — Regulator assembly (or separately serviceable cable) replacement with initialization restores window function at component cost. Door assembly replacement is wildly excessive; motor-only replacement leaves the broken cables unaddressed.

117. C — HV battery options span new/remanufactured OEM (most expensive, longest life), rebuilt/refurbished (moderate cost), and module-level replacement (lowest immediate cost). Presenting

all three with cost and warranty differences lets the customer match the investment to vehicle value and ownership plans.

118. D — HV cables are not field-spliceable due to safety and certification requirements; OEM replacement with megger-verified insulation resistance and OEM de-energize/re-energize procedure is the only safe and compliant repair. Improper splicing on HV cables creates lethal fault paths.

119. A — Module-level HV battery repair, when the manufacturer's procedure supports it, replaces only the degraded cells at a fraction of full pack cost. Balancing after module replacement and verifying pack performance ensure the repair is durable.

120. B — Charging port assemblies are modular and replaceable on most EVs; targeted replacement with signal integrity verification (CP, PP, ground) and charging tests restores function at component cost. Full vehicle replacement is wildly excessive for a damaged port.

121. D — Class 0 (1000 V) gloves with leather protectors, a Cat III/IV meter, a megger, and proper training are the foundational HV equipment investment. The capital cost is a small fraction of the liability exposure from injury or improper service, and the equipment enables HV revenue work.

122. C — BMS controller replacement (when separately serviceable) with programming and calibration restores data reporting at a fraction of pack replacement cost. Honest diagnosis identifies whether the BMS or the cells are the actual fault, and addresses the failed module specifically.

123. A — Electric coolant pump replacement with low-conductivity coolant refill, bleeding, and scan tool verification addresses the specific failed component at modest cost. The HV battery cooling system requires its specific coolant chemistry, and pump replacement is the targeted repair when the pump has failed.

124. B — HV glove pre-use inspection (visual check plus roll-and-trap air test) verifies the gloves remain safe and effective. Discarding gloves that pass inspection wastes resources; using gloves without inspection creates safety risk. The published service life and inspection criteria together govern replacement timing.

125. D — Cold-weather EV range loss is normal physical behavior — lithium-ion efficiency drops in cold, cabin heating draws energy, and regen acceptance is reduced. Honest explanation with mitigation strategies (preconditioning, seat/wheel heat, tire pressure) addresses the customer's concern without recommending unnecessary parts replacement.