PRACTICE EXAM 14: ASE G1 SIMULATION — 55 QUESTIONS

1. During a multi-point inspection, a technician discovers that the vehicle needs approximately $2,400 in repairs beyond the customer's original service request. Which of the following is the correct procedure BEFORE performing any additional work?

A. Perform the most critical safety repairs immediately and inform the customer afterward

B. Complete all repairs and present the total bill at pickup since the work is clearly necessary

C. Contact the customer, explain each recommended repair and its urgency, provide a written estimate, and obtain authorization before performing any work beyond the original request

D. Prioritize the repairs the technician believes are most important and perform only those without customer contact

2. A technician is replacing an engine air filter and notices that the mass airflow (MAF) sensor is located in the air filter housing. While removing the old filter, the technician accidentally touches the MAF sensor element with their finger. Which of the following describes the potential consequence?

A. Skin oils transferred to the MAF sensing element can contaminate the hot wire or hot film, causing it to misread airflow and potentially triggering lean/rich DTCs and drivability complaints — the sensor element should be cleaned with MAF-specific cleaner before reassembly

B. Touching the MAF sensor has no effect because the element is sealed behind a protective screen

C. The MAF sensor must be replaced if touched because the element cannot be cleaned

D. The skin oils will burn off the next time the engine starts and the sensor heats up

3. A vehicle's exhaust flex pipe (located between the exhaust manifold and the catalytic converter) has cracked and is leaking. Which of the following symptoms would this leak MOST likely cause?

A. A rattling noise from the catalytic converter substrate

B. Reduced engine coolant temperature

C. A clogged fuel injector on the nearest cylinder

D. A ticking or hissing exhaust noise under the vehicle, a potential exhaust smell in the cabin, and possible lean-reading O2 sensor data — the leak allows exhaust to escape before reaching the sensor AND allows ambient air to enter the exhaust stream near the sensor, potentially affecting fuel trim

4. A vehicle's center high-mounted stop light (CHMSL — the third brake light) does not illuminate when the brake pedal is pressed. Both lower brake lights work normally. Which of the following is the MOST likely cause?

A. A faulty brake light switch that only powers two of the three brake light circuits

B. A burned-out CHMSL bulb or LED assembly, or a wiring fault specific to the CHMSL circuit — since the lower brake lights work, the brake switch and power supply are confirmed functional; the fault is isolated to the CHMSL's individual bulb, connector, or wiring

C. A faulty turn signal switch that is intercepting the brake light signal

D. A blown brake light fuse affecting only the CHMSL circuit

5. A technician is performing brake work and dust from the brake pads is visible on the brake components. The vehicle is a pre-2005 model that may have had non-OEM brake pads installed at some point. Which of the following is the correct safety precaution regarding brake dust?

A. Treat all brake dust as potentially containing asbestos unless confirmed otherwise — never blow brake dust with compressed air; use a HEPA-filtered vacuum, wet cleaning method, or approved brake washer to capture and contain the dust

B. Blow the dust off with compressed air to clear the work area quickly

C. Brake dust from any vehicle manufactured after 1990 is guaranteed asbestos-free and can be handled without precaution

D. Brake dust is harmless calcium compound residue and requires no special handling

6. A customer's vehicle has a 12-volt power outlet (cigarette lighter socket) that does not work. The customer uses it to charge their phone. All other electrical accessories work normally. Which of the following should the technician check FIRST?

A. The vehicle's battery voltage under load

B. The power outlet wiring harness for a short circuit

C. The fuse for the power outlet circuit — a blown fuse is the most common cause of a dead power outlet, often caused by an aftermarket accessory that drew excessive current or by a foreign object dropped into the socket creating a short

D. The body control module for a disabled outlet output

7. A vehicle's VIN (Vehicle Identification Number) is a 17-character code. A technician needs to determine the vehicle's model year. Which character position in the VIN provides the model year?

A. The first character, which identifies the country of manufacture

B. The eighth character, which identifies the engine type

C. The ninth character, which is the VIN check digit

D. The tenth character, which represents the model year of the vehicle

8. A vehicle's exhaust system has been modified with a resonator delete (the resonator has been removed and replaced with a straight pipe). The customer brings the vehicle in for a state inspection. Which of the following is the correct action?

A. Pass the inspection since the resonator is not an emissions control device

B. Pass the inspection if the vehicle's exhaust noise level is below the legal limit

C. Refer the customer to an exhaust shop for the resonator to be reinstalled before inspection

D. Follow the specific state's inspection regulations — in many states, removing any factory-installed exhaust component (including the resonator) is a modification that may cause the vehicle to fail a safety or emissions inspection; the technician must apply the state's specific criteria, not personal judgment

9. A technician discovers during service that a vehicle's odometer reading does not match the service history — the odometer shows fewer miles than the last recorded service entry. Which of the following is the correct action?

A. Ignore the discrepancy since odometer tampering is not the technician's responsibility

B. Document the discrepancy on the repair order, inform the service advisor or shop manager, and note the current odometer reading accurately — odometer fraud is a federal crime, and the shop should not alter its records to match the suspect reading

C. Reset the vehicle's ECU to clear any stored mileage data

D. Adjust the service history to match the current odometer reading

10. A vehicle's engine has a coolant crossover pipe (the tube that connects the two cylinder head coolant passages on a V-engine) that is leaking at its O-ring seal. The leak is at the rear of the engine near the firewall. Which of the following is a significant consideration for this repair?

A. The crossover pipe must be welded to repair the leak

B. The coolant crossover pipe is accessible from under the vehicle without removing any other components

C. Access to the rear crossover pipe often requires removing the intake manifold, throttle body, and numerous other components — this labor-intensive repair should be quoted accurately so the customer understands the scope and cost before authorizing the work

D. The crossover pipe leak will self-seal once the engine reaches operating temperature

11. A customer asks the technician to install aftermarket components that the technician believes may compromise vehicle safety — specifically, lowering springs that exceed the manufacturer's

recommended travel range combined with removing the bump stops. Which of the following is the correct response?

A. Install the parts as requested since the customer has the right to modify their own vehicle

B. Install the parts but add a disclaimer to the work order absolving the shop of liability

C. Install only the lowering springs and leave the bump stops in place as a compromise

D. Decline the installation if it creates a known safety hazard, explain the safety concerns to the customer, and document the refusal — a shop has the professional and legal responsibility to refuse work that it believes will make a vehicle unsafe

12. A vehicle's license plate lights are both burned out. The customer does not consider this a priority repair. During a safety inspection, which of the following is correct?

A. License plate lights are a required safety inspection item in most jurisdictions — the vehicle should fail the inspection until the bulbs are replaced, as non-functioning license plate illumination is a traffic violation and a safety inspection failure point

B. License plate lights are cosmetic and not part of any safety inspection

C. Only one license plate light is required by law, so the vehicle passes if one socket is functional

D. License plate lights are only required on commercial vehicles

13. A technician is performing a coolant drain and refill. After draining, the technician adds the correct coolant mixture but the system only accepts 60% of its total capacity. The remaining 40% of the old coolant is trapped in the engine block, heater core, and passages. Which of the following is the correct interpretation?

A. The system is fully serviced since the new coolant was added to capacity

B. The trapped old coolant will be flushed out by the new coolant within 1,000 miles of driving

C. The resulting mixture is a blend of old and new coolant — for a complete coolant exchange, the system must be flushed by running the engine and draining/refilling multiple times, or by using a coolant exchange machine that circulates new coolant through the entire system while displacing the old

D. Adding more coolant beyond the fill capacity will force the old coolant out through the overflow

14. A vehicle's owner asks whether it is acceptable to use a full-size spare tire that is a different brand than the other three tires on the vehicle. The spare is the correct size and speed rating. Which of the following is correct?

A. All four tires must always be the same brand for proper handling

B. A full-size spare of the correct size, speed rating, and comparable tread depth can be safely used as a temporary replacement regardless of brand — tire brand alone does not create a safety issue as long as the critical specifications match

C. The spare must be the same brand but can be a different model within that brand

D. Using a different brand spare will damage the ABS system

15. A vehicle's catalytic converter has been stolen (cut from the exhaust system). The customer asks the technician to install a straight pipe in place of the converter to save money. Which of the following is the correct response?

A. Install the straight pipe and inform the customer that the check engine light will remain on

B. Install an aftermarket catalytic converter that is less expensive than OEM

C. Install the straight pipe since the converter was stolen and the customer is a victim

D. Decline to install a straight pipe — removing or bypassing a catalytic converter violates the federal Clean Air Act regardless of the reason; the technician must install a replacement converter (OEM or CARB-compliant aftermarket) to comply with federal and state emissions laws

16. A technician is returning a vehicle to the customer after a repair. During the delivery walk-around, the technician notices a new scratch on the rear bumper that was not documented on the pre-repair inspection form. Which of the following is the correct action?

A. Immediately notify the service advisor or manager, document the scratch with photographs, and disclose the damage to the customer before delivery — whether or not the shop caused the scratch, transparency protects the shop from a later accusation and maintains customer trust

B. Cover the scratch with touch-up paint before the customer sees it

C. Deliver the vehicle without mentioning the scratch since it was not documented on intake

D. Tell the customer the scratch was there when the vehicle arrived even without documentation

17. A vehicle's engine oil pressure warning light flickers at idle when the engine is at full operating temperature. The oil level is correct. Which of the following is the MOST likely cause?

A. A faulty oil pressure gauge sending unit that gives erratic readings when hot

B. The oil pressure warning light is triggered by a different sensor than the gauge and is unrelated

C. The oil pressure is dropping to the warning light's activation threshold at idle — oil thins as it heats, reducing pressure; a combination of normal hot-oil thinning and early bearing wear can cause pressure to briefly dip below the warning switch's trigger point at idle RPM, where pump output is lowest

D. The oil filter bypass valve is opening at idle and dumping pressure

18. A vehicle is brought in with the complaint that CarPlay or Android Auto does not connect through the vehicle's USB port. The customer's phone charges through the same port, and the infotainment system functions normally otherwise. Which of the following is the MOST likely cause?

A. The vehicle's infotainment software requires a dealer update to support phone connectivity

B. The vehicle's Bluetooth module is interfering with the USB connection

C. The phone's operating system is incompatible with the vehicle's infotainment system

D. The USB cable being used is a charge-only cable that lacks the data transfer wires required for CarPlay/Android Auto — many inexpensive or aftermarket cables only include the power conductors and omit the data pair; replacing it with a certified data-capable cable typically resolves the issue

19. A technician is diagnosing a vehicle with a P0420 and has confirmed the catalytic converter has failed. The replacement aftermarket converter is labeled "EPA-compliant" but is NOT labeled "CARB-compliant." The vehicle is registered in California. Which of the following is correct?

A. An EPA-compliant converter is acceptable in all 50 states

B. California and CARB-adoption states require a CARB-compliant (California Air Resources Board-approved) catalytic converter — EPA-only converters do not meet California's stricter emissions standards and cannot be legally installed on vehicles registered in those states

C. CARB compliance is only required for commercial vehicles in California

D. The converter can be installed as long as it physically fits the vehicle

20. A vehicle's engine has a persistent hot-restart problem — it starts easily when cold but cranks for an extended time when restarted after a hot soak (sitting for 15–30 minutes after being driven). Once running, it operates normally. Which of the following is the MOST likely cause?

A. Fuel vaporization (vapor lock or fuel boiling) in the fuel rail or fuel lines during the hot soak period — residual engine heat after shutdown raises underhood temperatures above operating levels, and the fuel can vaporize in the rail; the vapor must be purged by the fuel pump before liquid fuel reaches the injectors, causing extended cranking

B. A weak battery that loses charge during the hot soak period

C. A starter motor that expands when hot and cranks too slowly

D. An ignition module that fails when heat-soaked

21. A technician is performing a tire inspection and notices that one tire has a sidewall marking: "OUTSIDE." The tire is currently mounted with the "OUTSIDE" marking facing inward toward the vehicle. Which of the following is the correct action?

A. No action needed — the "OUTSIDE" marking is informational only and has no effect on tire performance

B. The marking indicates the tire's rotation direction, not its mounting orientation

C. Rotate the tire 180 degrees on the rim to correct the mounting

D. The tire must be dismounted and remounted with the "OUTSIDE" marking facing outward — asymmetric tires have different tread patterns on the inner and outer shoulders designed for specific performance characteristics; mounting them backward reduces wet traction and can affect handling

22. A customer returns one week after an oil change complaining that the engine sounds louder than before and the oil pressure gauge reads lower than usual. The technician checks the oil and finds the level is 2 quarts overfull. The oil has a gasoline smell. Which of the following BEST explains this condition?

A. The technician accidentally overfilled the engine during the oil change

B. The oil filter is the wrong part number and is allowing unfiltered oil to bypass

C. Fuel is diluting the engine oil — a leaking fuel injector, a stuck-open fuel pressure regulator, or excessive short-trip driving is allowing raw fuel to wash past the piston rings into the crankcase, raising the oil level, thinning the oil, and reducing oil pressure; the gasoline smell confirms fuel contamination

D. The oil drain plug was left loose and external contamination has entered the crankcase

23. A vehicle needs a replacement part that is available in three options: OEM (Original Equipment Manufacturer), OE-equivalent aftermarket, and salvage yard (used). The customer asks the technician to explain the differences. Which of the following is the MOST accurate comparison?

A. All three options are functionally identical and there is no meaningful difference

B. OEM parts match the original specifications and carry a manufacturer warranty; OE-equivalent aftermarket parts are made to similar specifications by third-party manufacturers at typically lower cost but with varying quality levels; salvage yard parts are used OEM parts with unknown remaining service life and typically no warranty — each option has a different balance of cost, quality, and risk that the customer should understand

C. Salvage yard parts are always superior because they have been "proven" in service

D. Aftermarket parts always outperform OEM parts because they address known design flaws

24. A technician replaces a battery on a vehicle. After the replacement, the electric windows, sunroof, and auto-dimming mirror must be re-initialized (relearned). Which of the following is the correct explanation for this requirement?

A. Many comfort and convenience modules store operating parameters (auto-up/down window limits, sunroof travel endpoints, mirror sensitivity settings) in volatile memory that is lost when battery power is interrupted — these features require a specific relearn procedure to re-establish their operating limits

B. The new battery's voltage is slightly different from the old battery, requiring all modules to recalibrate

C. Battery replacement always requires a full vehicle reprogram at the dealer

D. The relearn is optional and the features will self-calibrate within 100 miles of driving

25. A vehicle's engine has a turbocharger boost control solenoid DTC (P0234 — Overboost Condition). The vehicle has excessive power under acceleration and the engine appears to be running harder than normal. Which of the following is the safety concern with an overboost condition?

A. Overboosting causes excessive fuel consumption but no mechanical risk

B. Overboosting reduces engine power to protect the catalytic converter

C. Overboosting only affects emissions and has no performance impact

D. Excessive boost pressure subjects the engine's pistons, connecting rods, head gasket, and turbocharger to forces beyond their design limits — continued driving with an overboost condition risks catastrophic engine failure including blown head gaskets, bent connecting rods, or turbocharger destruction

26. A vehicle's engine has been running rich, and the technician notices that the spark plugs are covered in black, dry soot. The electrodes are intact but heavily carbon-fouled. Which of the following is the correct action regarding the spark plugs?

A. Clean the spark plugs with sandpaper and reinstall them

B. Leave the fouled plugs in place and fix only the rich condition — the plugs will self-clean

C. Replace the spark plugs AND diagnose the root cause of the rich condition — fouled plugs may misfire even after the rich condition is corrected because the carbon deposits on the insulator can provide a conductive path that allows ignition voltage to leak to ground; new plugs combined with fixing the underlying cause provides a complete repair

D. Replace only the most heavily fouled plugs and leave the others

27. A technician needs to look up the wiring diagram for a vehicle's fuel pump circuit. The service information system offers multiple diagram formats. Which of the following diagram types shows the physical location of components and connectors in addition to the circuit schematic?

A. A schematic diagram, which shows circuit logic but not physical component locations

B. A component locator diagram or layout diagram, which shows the physical position of components, connectors, grounds, and splices on the vehicle in addition to the wiring paths — this type of diagram helps the technician find components in the actual vehicle, not just understand the circuit theory

C. A flow chart, which shows diagnostic decision steps

D. A wiring harness routing diagram, which shows only the harness path without circuit connections

28. A vehicle with an automatic transmission has a customer complaint of a delayed 1–2 upshift when cold. After the transmission warms up (approximately 5 minutes of driving), the shifts are normal. There are no DTCs. Which of the following is the MOST likely explanation?

A. Many automatic transmissions are programmed to delay or firm up shifts when the transmission fluid is cold — the TCM intentionally holds lower gears longer to allow the fluid to warm up, reduce clutch slip, and protect internal components; this is a normal calibration strategy, not a fault

B. The transmission fluid is the wrong type and is too thick when cold

C. The 1–2 shift solenoid is sticking due to varnish buildup that dissolves when warm

D. The torque converter clutch is engaging prematurely during cold operation

29. A technician is working on a vehicle's fuel system and needs to relieve fuel system pressure before disconnecting a fuel line. Which of the following is the standard procedure for relieving fuel pressure?

A. Locate the fuel pump fuse or relay, remove it, start the engine and let it run until it stalls from fuel starvation (relieving rail pressure), then crank the engine for a few additional seconds to ensure pressure is fully dissipated — then proceed with the repair

B. Loosen a fuel injector fitting slowly and allow fuel to spray until pressure drops

C. Open the gas cap to relieve tank pressure, which also relieves rail pressure

D. Disconnect the fuel pump electrical connector and crank the engine briefly

30. A vehicle's TPMS warning light comes on every morning during cold weather but turns off after 10 minutes of driving. All tires are set to the correct pressure when checked during the day. This scenario has been addressed in a previous exam. However, the customer asks a NEW question: "Should I just inflate the tires higher to prevent the morning warning?" Which of the following is the correct advice?

A. Yes — overinflating by 3–5 psi prevents the cold-weather pressure drop from triggering the TPMS

B. Yes — inflating tires 10% above the placard specification is safe and eliminates the morning warning

C. No — tire pressure should always be set to the vehicle manufacturer's specification listed on the door jamb placard when the tires are COLD (before driving); overinflating to prevent the TPMS warning causes center tread wear, reduced traction, and a harsher ride; the proper solution is to set cold pressures to specification on a cold morning

D. No — the TPMS should be recalibrated to a lower threshold to prevent false warnings

31. A technician is using a parts washing solvent tank to clean greasy brake components. Which of the following safety practices is required?

A. The solvent tank lid should remain open during use for ventilation

B. The solvent tank must have a fusible-link lid that closes automatically in a fire, and the technician should minimize skin contact with the solvent, use gloves, and ensure the area is well-ventilated — solvent tanks contain flammable chemicals that require proper handling, fire protection, and personal protective equipment

C. Any solvent can be used in the tank as long as it dissolves grease effectively

D. Solvent tanks do not require any special fire protection because the solvents used are non-flammable

32. A vehicle's engine has a persistent P0171 (System Too Lean — Bank 1) code. The technician has checked for vacuum leaks using smoke testing and found none. Fuel pressure is within specification. The MAF sensor has been cleaned and reads within range. Which of the following less-common causes should the technician investigate NEXT?

A. The camshaft position sensor, which can affect fuel injection timing on Bank 1

B. The exhaust manifold, which may have a leak that is introducing false air to the upstream O2 sensor

C. The ignition timing, which may be over-advanced and creating a false lean reading

D. An exhaust leak BEFORE the upstream Bank 1 O2 sensor — an exhaust leak in the manifold or exhaust pipe between the engine and the sensor allows ambient air to be drawn into the exhaust stream during low-pressure exhaust pulses, introducing extra oxygen that the O2 sensor reads as a lean condition; the PCM adds fuel unnecessarily, and the code sets because the fuel trim correction exceeds the threshold

33. A customer's vehicle has been in the shop for three days awaiting parts. The technician left the windows down overnight and it rained. The interior is now wet. Which of the following is the correct action?

A. Immediately inform the customer and the shop manager, thoroughly dry the interior including under the carpets, inspect for potential electrical damage (wet connectors, modules under seats or carpets), and take responsibility for the damage — the shop is responsible for the vehicle's condition while it is in the shop's care

B. Dry the interior as best as possible before the customer returns and do not mention the incident

C. Tell the customer the vehicle was found with the windows down when it arrived at the shop

D. The rain water will evaporate on its own and no action is needed

34. A vehicle's engine overheats in traffic but cools down at highway speed. The cooling fan has been verified as operational. The thermostat has been replaced. The coolant level is correct. Which of the following should the technician investigate NEXT?

A. The heater core for a restriction

B. The water pump for a worn impeller or slipping on its shaft

C. The radiator for internal restriction or partially clogged fins — even with a working fan and thermostat, a radiator with internal passage blockage or externally blocked fins (bugs, debris, leaves between the condenser and radiator) cannot reject enough heat at low-speed/idle conditions where airflow is limited; at highway speed, the increased ram air partially compensates for the reduced cooling capacity

D. The A/C condenser for an overcharge condition

35. A vehicle equipped with keyless ignition (push-button start) has a customer who accidentally left the engine running in an attached garage overnight with the key fob inside the house. Which of the following addresses the safety concern?

A. The engine automatically shuts off after 30 minutes in all push-button start vehicles

B. This scenario highlights a real safety hazard — carbon monoxide from the running engine can enter the home through the shared wall; many newer vehicles have an automatic shutoff feature after a set time, but not all do; the technician should verify whether the customer's vehicle has this feature and educate them about the CO danger of leaving a running vehicle in an enclosed space

C. There is no safety concern because modern catalytic converters eliminate CO from the exhaust

D. The engine will stall on its own once the fuel tank is empty

36. A vehicle needs a wheel alignment. The technician measures ride height and finds that the left front is 0.75 inches lower than the right front. Which of the following is the correct action BEFORE performing the alignment?

A. Perform the alignment using the current ride height and adjust the angles to compensate

B. Add a spacer above the left front spring to equalize ride height

C. Align only the right front since the left front is out of specification

D. Identify and correct the cause of the ride height difference (worn/broken spring, collapsed strut, damaged suspension component) before aligning — an alignment performed on a vehicle with unequal ride height produces angles that are only correct at that height; as the vehicle loads and unloads, the angles shift beyond specification, causing uneven tire wear and handling issues

37. A customer asks the technician whether premium fuel is required for their turbocharged engine that specifies "premium recommended" in the owner's manual. Which of the following is the correct response?

A. "Recommended" means the engine is optimized for premium fuel and will produce maximum performance and efficiency with it, but it CAN safely use regular fuel — the PCM's knock sensor system will retard timing as needed to prevent detonation with lower octane, at the cost of reduced power and slightly lower fuel economy; "required" would mean premium is mandatory

B. Regular fuel will damage the engine immediately and must never be used

C. Premium and regular fuel are identical in energy content and the recommendation is meaningless

D. "Recommended" and "required" mean the same thing in owner's manuals

38. A vehicle's engine has a slow coolant leak that drips onto the exhaust manifold, producing a sweet smell and occasional steam from under the hood. No puddle forms on the ground because the coolant

evaporates on the hot exhaust. Which of the following is an additional safety concern beyond the coolant loss?

A. The sweet smell will attract animals under the vehicle

B. The steam will trigger the vehicle's moisture sensors and set a DTC

C. Coolant dripping on a hot exhaust manifold creates a fire risk when the manifold reaches temperatures above the coolant's flash point, and the steam and sweet ethylene glycol odor entering the cabin through the HVAC cowl intake creates a health hazard — ethylene glycol vapor is toxic

D. The evaporating coolant will damage the exhaust manifold's catalytic coating

39. A vehicle's rear brakes use a drum-in-hat design (drum parking brake integrated inside the rear brake rotor). During a rear brake pad replacement, the technician notices that the parking brake shoes inside the hat are worn thin. Which of the following is the correct action?

A. Replace the rear brake pads only and ignore the parking brake shoes since they are a separate system

B. Replace both the brake pads AND the parking brake shoes during the same service — the rotor must be removed for pad replacement anyway, providing access to the drum-in-hat parking brake; waiting until the parking brake shoes fail completely means repeating the entire disassembly

C. Replace the parking brake shoes only and leave the existing brake pads

D. Adjust the parking brake cable to compensate for the thin shoes

40. A vehicle's scan tool shows a DTC for the fuel tank pressure (FTP) sensor circuit. The customer has no drivability complaints. Which of the following systems does the FTP sensor serve?

A. The fuel injection system, which uses tank pressure to calculate fuel delivery

B. The transmission control system, which uses tank pressure to adjust shift points based on fuel weight

C. The cruise control system, which monitors fuel level through tank pressure

D. The EVAP (evaporative emissions) system — the FTP sensor monitors the pressure or vacuum level inside the sealed fuel tank, allowing the PCM to detect leaks in the EVAP system by monitoring pressure changes during the leak detection monitor; it has no direct effect on engine performance, which explains the absence of drivability complaints

41. A customer wants to know how often the brake fluid should be changed. The vehicle's owner's manual does not specify a brake fluid replacement interval. Which of the following is the correct recommendation?

A. Brake fluid is hygroscopic (absorbs moisture from the atmosphere) and should be tested for moisture content or replaced every 2–3 years regardless of mileage — moisture-contaminated fluid has a reduced boiling point that can cause brake fade under heavy braking, and the moisture promotes internal corrosion of the ABS modulator, calipers, and brake lines

B. Brake fluid never needs replacement because the system is sealed

C. Brake fluid only needs replacement when the brake pads are changed

D. Brake fluid should be replaced every 100,000 miles regardless of condition

42. A vehicle has a warning light for the "low washer fluid" indicator. The technician fills the washer reservoir to the top but the light remains on. Which of the following is the MOST likely cause?

A. The washer fluid is the wrong type and the sensor cannot detect it

B. The warning light requires a scan tool reset after the reservoir is refilled

C. The washer fluid level sensor (float switch or resistance-type sensor) inside the reservoir has failed or its connector has become corroded or disconnected — the sensor cannot detect the increased fluid level despite the reservoir being full

D. The BCM must be reprogrammed to recognize the refilled reservoir

43. Technician A says that a vehicle's serpentine belt tensioner can be tested by observing the tensioner arm's position relative to the wear indicator marks on the tensioner body. Technician B says the

tensioner can only be evaluated by removing the belt and measuring the spring force with a tension gauge. Who is correct?

A. Technician B only

B. Technician A only — most modern automatic tensioners have a built-in wear indicator: a pointer on the tensioner arm and reference marks on the tensioner body; when the pointer moves outside the acceptable range (indicating the spring has lost tension or the belt has stretched), the belt and/or tensioner must be replaced; this is a quick, no-tools-required visual check

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

44. A vehicle's engine has been diagnosed with a failed head gasket — coolant is entering the combustion chamber on cylinder 3. The repair exceeds the scope of Maintenance and Light Repair. Which of the following is the correct action for an MLR-certified technician?

A. Perform the head gasket replacement since the diagnosis has already been completed

B. Subcontract the repair to a mobile mechanic who will work in the shop's bay

C. Add a cooling system sealer product and return the vehicle to the customer

D. Document the diagnosis, explain the findings to the customer, and refer the repair to a technician with the appropriate advanced certification (ASE A1 — Engine Repair) or to a facility equipped to perform the repair — the MLR technician correctly diagnosed the problem, which IS within MLR scope; the internal engine repair is not

45. A vehicle's wheel lock key (lug nut key for anti-theft lug nuts) is missing. The customer needs a tire rotation. Which of the following is the correct procedure?

A. Use a universal wheel lock removal socket set to remove the locking lug nuts

B. Drill out the locking lug nuts to remove the wheels

C. Contact the wheel lock manufacturer or dealer with the vehicle's key code (often on a card provided with the locks) to obtain a replacement key — if no code is available, a wheel lock removal tool set can be used, but the locking lugs should then be replaced with standard lug nuts or a new locking set with a key the customer retains

D. Inform the customer that the tires cannot be rotated until a key is found

46. A vehicle is being returned to the customer after a brake service. The technician performs a post-repair road test. During the road test, the technician notices the steering wheel is slightly off-center — it was centered before the repair. Which of the following is the MOST likely cause?

A. During the brake service, the technician may have bumped a tie rod end or disturbed the steering linkage while working near the suspension components — the toe setting has shifted slightly, causing the off-center steering wheel; a toe check and possible adjustment is needed before returning the vehicle

B. The new brake pads are creating unequal friction that pulls the steering off-center

C. The steering column was repositioned when the driver's seat was adjusted for the road test

D. The off-center steering wheel is unrelated to the brake service and was pre-existing

47. A vehicle's battery tested good during a load test. However, the customer states the battery fails to start the vehicle after sitting for exactly 3 days — not 1 day, not 2 days, but consistently 3 days. A parasitic draw test shows 45 milliamps (within specification). Which of the following is the MOST likely explanation?

A. A parasitic draw of 45 mA is normal and would not drain a healthy battery in 3 days

B. The battery has adequate capacity for 1–2 days of parasitic draw but barely insufficient capacity for 3 days — the battery may have slightly reduced capacity that is still enough to pass a load test (which measures instantaneous output, not long-term reserve) but cannot sustain even a normal parasitic draw for 72+ hours; the battery is at the edge of its serviceable life

C. The customer is leaving an accessory on for exactly one hour each night

D. The alternator has a diode that leaks current only after 48 hours of sitting

48. A vehicle's engine produces white smoke from the exhaust during warmup that continues beyond the normal 1–2 minutes. The smoke has a sweet smell. Engine coolant level is decreasing. Which of the following is the MOST likely cause?

A. Condensation in the exhaust system from cold-weather operation

B. An overfilled engine oil level that is burning off excess oil

C. A rich fuel condition that is producing unburned fuel vapor in the exhaust

D. Coolant is entering the combustion chamber through a failed head gasket, cracked cylinder head, or cracked block — the sweet-smelling white smoke is steam produced by coolant being vaporized during combustion; the smoke persisting beyond the normal warm-up condensation period and the concurrent coolant loss confirm internal coolant leakage

49. A vehicle's technician has finished a repair and is completing the work order. Which of the following documentation practices is correct?

A. Record only the parts installed and the total labor time

B. Write a brief summary like "fixed car" and list the parts

C. Document the customer's concern (in their words), the diagnostic cause found, the specific correction performed (parts replaced, procedures followed), and verify that the concern is resolved — this three-part documentation (concern, cause, correction) creates a complete service record that protects both the customer and the shop and provides valuable history for future technicians

D. Documentation is optional as long as the customer signs the invoice

50. A vehicle has an intermittent electrical concern that only occurs when driving over rough roads. The concern does not occur in the shop when the vehicle is stationary. Which of the following diagnostic approaches is MOST appropriate?

A. Perform a thorough wiggle test on all related wiring harness connectors, grounds, and modules while monitoring the affected circuit with a DMM or scan tool — physically manipulating harness sections

and connectors simulates the vibration and flex conditions that occur during rough-road driving to reproduce the intermittent fault in a controlled environment

B. Drive the vehicle continuously on rough roads until the fault occurs and then immediately check the circuit

C. Replace all connectors in the affected circuit as a precaution

D. Wait for the problem to become permanent before attempting diagnosis

51. A customer brings in a vehicle for a second opinion. The previous shop diagnosed a failed engine and recommended a complete engine replacement costing $6,500. The customer has no confidence in the first shop's diagnosis. Which of the following is the correct approach?

A. Take the first shop's diagnosis at face value and begin the engine replacement

B. Perform an independent diagnosis from scratch — verify the symptoms, run compression tests, leak-down tests, and inspect for the specific failure the other shop identified; present the findings objectively to the customer regardless of whether they confirm or contradict the first diagnosis

C. Tell the customer the first shop was wrong to build rapport, then perform the same repair

D. Refuse to provide a second opinion because it undermines the other shop's credibility

52. A vehicle equipped with an automatic emergency braking (AEB) system has a customer complaint that the system brakes unexpectedly when approaching a metal bridge overpass at highway speed. There are no DTCs. Which of the following is the MOST likely explanation?

A. The AEB system is malfunctioning and should be disabled

B. The vehicle's speed is exceeding the AEB system's maximum operating range

C. The AEB sensors are misaligned and detecting the roadway surface as an obstacle

D. Metal structures, overpasses, and road signs can create radar reflections that the AEB system momentarily interprets as an obstacle — this is a known limitation of radar-based AEB systems and is sometimes addressed by manufacturer software updates that improve target discrimination; the technician should check for applicable TSBs or software updates

53. A vehicle's engine has been running on conventional oil for 150,000 miles. The customer now wants to switch to full synthetic oil. A technician at the previous shop told the customer that switching to synthetic at high mileage would cause leaks. Which of the following is the correct response?

A. The previous technician's advice is correct — synthetic oil is incompatible with older engine seals

B. Synthetic oil should only be used in engines with fewer than 50,000 miles

C. Modern synthetic oils are compatible with all seal materials used in automotive engines and can be safely used at any mileage — the myth about synthetic oil causing leaks originated with early synthetic formulations from decades ago that have long since been reformulated; if existing seals are already worn and weeping, synthetic oil's superior cleaning properties may make a pre-existing leak slightly more visible, but it does not CAUSE new leaks

D. The customer should use a synthetic blend as a transitional product for 5,000 miles before switching to full synthetic

54. A technician is testing a vehicle's charging system. With the engine running at 2,000 RPM and all accessories off, the voltmeter reads 14.4 volts at the battery. The technician then turns on the headlights, blower motor on high, rear defroster, and heated seats. The voltage drops to 13.9 volts. Which of the following is the correct interpretation?

A. The voltage drop from 14.4V to 13.9V under full electrical load is within normal operating range — the alternator is correctly compensating for the increased current demand by increasing its output while maintaining system voltage above the minimum threshold of approximately 13.2V

B. The 0.5V drop indicates the alternator cannot handle the electrical load and should be replaced

C. The voltage should increase under load as the alternator works harder

D. The alternator is overcharging under no-load conditions and undercharging under load

55. A customer asks the technician whether it matters what type of jack is used when changing a flat tire on the roadside. The vehicle came with a scissor jack in the trunk. Which of the following is the correct advice?

A. Any jack can be used on any vehicle as long as it has adequate weight capacity

B. The vehicle's factory-supplied jack is designed for that specific vehicle and should be used at the manufacturer-specified jack points only — using a jack at an unauthorized point can damage the vehicle's body, crush fuel lines, bend suspension components, or cause the vehicle to fall off the jack; the owner's manual identifies the correct jack points

C. A hydraulic floor jack is always safer than a scissor jack and can be placed at any point under the vehicle

D. The jack type does not matter as long as the vehicle is raised on a flat surface

Practice Exam 14: Answer Key and Full Explanations

1. C — No repair beyond the customer's original authorization may be performed without the customer's informed consent. The technician must contact the customer, clearly explain each recommended repair — what it is, why it's needed, and the urgency — provide a written or verbal estimate, and receive explicit authorization before proceeding. Performing unauthorized work creates legal liability for the shop and violates consumer protection laws in virtually every jurisdiction. This is a non-negotiable professional standard.

2. A — The MAF sensor's hot wire or hot film element is an extremely sensitive component that measures airflow by detecting the cooling effect of air passing over it. Skin oils deposited by a finger create an insulating film that alters the element's heat transfer characteristics, causing it to underreport or overreport airflow. This contamination can trigger lean/rich DTCs and drivability complaints. If touched, the element should be cleaned immediately with a MAF-specific cleaner (not carburetor cleaner or brake cleaner, which leave residue).

3. D — The exhaust flex pipe is designed to absorb engine movement and vibration, preventing exhaust stress cracks at rigid joints. When it cracks, exhaust gases escape under pressure, producing an audible ticking or hissing noise — often loudest under acceleration when exhaust volume is highest. The leak also creates two diagnostic problems: exhaust smell can enter the cabin through the HVAC cowl intake, and the leak can introduce ambient air near the upstream O2 sensor, causing false lean readings and positive fuel trim corrections.

4. B — The CHMSL operates on a dedicated circuit branch — it shares the brake light switch power supply with the lower brake lights but has its own wiring path, connector, and bulb. Since both lower brake lights work, the switch, fuse, and main brake light power circuit are confirmed functional. The fault is isolated to the CHMSL's individual components: a burned-out bulb (or failed LED array), a

corroded connector at the high-mount housing, or a broken wire in the CHMSL's dedicated circuit segment.

5. A — Although asbestos brake pads were phased out of OEM production, aftermarket asbestos pads remained available and were commonly installed through the mid-2000s. On any vehicle — particularly pre-2005 models or vehicles with an unknown brake pad history — brake dust should be treated as potentially containing asbestos. OSHA prohibits using compressed air to clean brake assemblies due to the risk of inhaling airborne asbestos fibers. Approved cleaning methods include HEPA-filtered vacuum systems, wet washing, and low-pressure enclosed brake washing equipment.

6. C — The 12-volt power outlet (cigarette lighter socket) is protected by its own fuse, and this fuse is the single most common failure point for a dead outlet. Phone chargers, portable tire inflators, and other accessories that draw high current can blow the fuse. More insidiously, small metallic objects (coins, paper clips) can fall into an empty socket and create a direct short to ground that blows the fuse instantly. Checking and replacing the fuse is a 30-second diagnosis that resolves the majority of dead outlet complaints.

7. D — The VIN is a standardized 17-character code where each position carries specific information. The tenth character designates the model year using a rotating alphanumeric code (A=2010, B=2011... through Y, then 1=2001, 2=2002, etc.). The first character identifies the country of manufacture, characters 4–8 describe the vehicle attributes (engine, body style, restraint system), the ninth character is a mathematical check digit for VIN validation, and characters 12–17 are the production sequence number.

8. D — Exhaust system modification regulations vary significantly by state. Some states inspect only for emissions compliance (catalytic converter presence), while others include noise level testing, and some inspect for the presence of ALL original exhaust components including resonators and mufflers. The technician must apply the specific inspection criteria of their state's program — not personal judgment about whether a resonator affects emissions. When in doubt, consulting the state inspection manual for the specific component requirements is the correct approach.

9. B — An odometer reading that is LOWER than the last documented service entry is a red flag for possible odometer fraud — a federal offense under the Motor Vehicle Information and Cost Savings Act. The technician's responsibility is to accurately document the current reading, note the discrepancy on the repair order, and alert management. The shop must NOT alter its own records to match the suspect reading, and it should not accuse the customer but should ensure its documentation creates an accurate record of what was observed.

10. C — The coolant crossover pipe on a V-engine connects the cylinder head coolant passages at the rear of the engine, typically underneath the intake manifold. Accessing it requires removing the intake manifold, throttle body, fuel rail, wiring harness, and numerous vacuum lines and sensors. This is a labor-intensive repair that can take 4–8 hours on some applications. Providing the customer with an accurate quote that reflects the actual labor scope prevents sticker shock and builds trust.

11. D — A shop has both the professional responsibility and the legal right to refuse work that it believes will make a vehicle unsafe. Removing bump stops from a lowered vehicle eliminates the last physical barrier that prevents the suspension from bottoming out violently on the frame or body — which can cause loss of vehicle control, structural damage, and occupant injury. Documenting the refusal and the safety rationale protects the shop if the customer has the work done elsewhere and a failure occurs.

12. A — License plate illumination is a traffic safety and law enforcement requirement: the plate must be legible at night. Most state safety inspection programs include license plate lights as a mandatory item. Non-functioning plate lights are a traffic citation issue and an inspection failure point. The repair is typically a simple bulb replacement, but the vehicle should not pass a safety inspection with inoperative license plate lighting regardless of the customer's opinion of its importance.

13. C — A simple drain-and-fill replaces only the coolant that drains by gravity from the radiator and accessible passages — typically 40–60% of the total system volume. The remaining 40–60% stays trapped in the engine block, heater core, and internal passages. The result is a mixture of old and new coolant that provides diluted protection. For a complete exchange, the system must be flushed through multiple drain-refill cycles or serviced with a coolant exchange machine that continuously displaces old with new.

14. B — Tire brand alone does not affect safety as long as the critical specifications — size, load rating, speed rating, and comparable tread depth — match between the spare and the other tires. Different brands with the same size designation have the same rolling circumference, load capacity, and speed capability. Mixing brands on the same axle for extended driving can produce slightly different handling characteristics due to compound and tread differences, but for temporary spare use, it is safe and acceptable.

15. D — The Clean Air Act (Section 203) makes it a federal crime to remove, disable, or render inoperative any emissions control device on a motor vehicle — including the catalytic converter. This prohibition applies regardless of why the converter is missing. The technician must install a legal replacement converter: either an OEM unit or a CARB-compliant aftermarket converter (in California

and CARB-adoption states) or an EPA-compliant converter (in non-CARB states). Installing a straight pipe violates federal law and exposes both the technician and the shop to significant fines.

16. A — Transparency and documentation are the correct response to any damage discovered during the vehicle's time in the shop — whether the shop caused it or not. Photographing the damage, notifying management, and disclosing it to the customer BEFORE delivery protects the shop from a later accusation ("you caused that scratch") because the shop proactively identified and documented it. Concealing damage or making assumptions about its origin destroys customer trust and creates legal liability.

17. C — The oil pressure warning light activates at a very low threshold — typically 5–10 psi. At hot idle, oil has thinned to its minimum viscosity, the pump turns at its lowest speed, and the engine's bearing clearances are at their maximum from thermal expansion. This combination produces the minimum oil pressure the engine will see. If bearing wear has increased clearances even slightly beyond design, the pressure at hot idle can briefly dip to the warning light's trigger point. This flickering is an early warning of bearing wear progression.

18. D — CarPlay and Android Auto require a USB cable that includes both power AND data conductors. Many inexpensive cables and short charging cables include only the two power wires (5V+ and ground) to reduce cost and cable thickness. These charge-only cables power the phone but cannot transmit the data protocol required for CarPlay/Android Auto communication. Replacing the cable with an OEM or certified MFi (Made for iPhone) / USB-IF certified cable that includes all four conductors (power, ground, D+, D-) resolves the issue in the vast majority of cases.

19. B — California and states that have adopted CARB standards (currently 15+ states) require catalytic converters to meet stricter emissions performance requirements than the federal EPA standard. A converter labeled "EPA-compliant" meets the minimum federal requirement but may NOT meet CARB's higher catalyst efficiency, substrate loading, or durability standards. Installing an EPA-only converter in a CARB state is illegal and will result in the vehicle failing its next smog inspection. The technician must verify the vehicle's registration state before ordering the converter.

20. A — Hot-restart difficulty is a classic heat soak symptom. After shutdown, residual engine heat raises underhood temperatures ABOVE the levels seen during operation (because the cooling system is no longer circulating coolant). Fuel in the rail, lines, and injectors can reach temperatures above its boiling point and vaporize. When the driver attempts to restart, the fuel pump must purge the vapor and refill the rail with liquid fuel before the injectors can deliver a combustible mixture. This purging process causes the extended crank time.

21. D — Asymmetric tires have different tread designs on the inner and outer shoulders — the outer shoulder typically has larger, more rigid tread blocks for dry cornering stability, while the inner shoulder has more sipes and channels for wet traction. Mounting the tire with the "OUTSIDE" marking facing inward reverses these performance zones — the wet traction design faces outward where it is less effective, and the dry cornering design faces inward where it doesn't contact the road during turns. The tire must be remounted correctly.

22. C — An oil level that is ABOVE the full mark and smells like gasoline is definitive evidence of fuel dilution — raw fuel is entering the crankcase and mixing with the engine oil. This thins the oil, reducing its viscosity and load-carrying capacity (explaining the lower oil pressure reading) and raises the oil level above the full mark. Common causes include a leaking fuel injector (dripping fuel past the rings while the engine is off), a ruptured fuel pressure regulator diaphragm, or chronic short-trip driving where the engine never reaches operating temperature to evaporate fuel from the oil.

23. B — This is the most balanced and accurate comparison. OEM parts are manufactured to the vehicle manufacturer's exact specifications with a manufacturer-backed warranty. Aftermarket OE-equivalent parts vary widely — some equal OEM quality at lower cost, while others cut corners in materials or tolerances. Salvage yard parts are genuine OEM parts with unknown wear history and typically no warranty beyond a limited exchange period. The customer deserves this honest comparison to make an informed cost-versus-risk decision.

24. A — Many vehicle comfort and convenience features store their operating parameters in volatile memory that requires continuous battery power. Auto-up/down windows learn their travel endpoints (where to stop). Sunroofs learn their open/close limits. Auto-dimming mirrors store sensitivity settings. When battery power is interrupted, these learned values are erased. Each feature requires a specific relearn procedure — typically a full open-close cycle with a brief pause at each endpoint — to re-establish the correct operating limits.

25. D — Engine components are designed to withstand specific maximum cylinder pressures. When turbocharger boost exceeds the engineered limit (overboost), the resulting cylinder pressures can exceed the head gasket's clamping force (blowing the gasket), exceed the connecting rod's yield strength (bending the rod), crack the piston crown, or overspeed and overheat the turbocharger itself. An overboost condition is an immediate safety and durability concern that requires the vehicle to be driven gently or not at all until the boost control system is repaired.

26. C — Carbon-fouled spark plugs are compromised even if the rich condition is corrected. The carbon deposits on the ceramic insulator between the center electrode and the ground shell create a conductive path that allows ignition voltage to leak to ground instead of jumping the spark gap. Even after the air-

fuel ratio returns to normal, the carbon-tracked plugs continue to misfire because the conductive path is already burned into the ceramic. New plugs combined with the underlying rich condition repair provides a complete, lasting fix.

27. B — A component locator or layout diagram shows where parts are physically installed on the vehicle — displayed on a vehicle outline with labels identifying each component, connector, ground point, and splice by their actual location on the body, engine, or frame. This is essential for actually FINDING a component during hands-on diagnosis. A schematic diagram shows circuit logic (what's connected to what) but not physical location. The technician typically needs both: the schematic to understand the circuit, and the locator to find the parts.

28. A — Many automatic transmissions are programmed with a cold-start shift strategy that intentionally delays upshifts and increases shift firmness when the transmission fluid temperature is below a threshold (typically 60–80°F). This strategy protects internal clutch packs from slippage during the period when cold fluid cannot transmit hydraulic pressure as efficiently and the clutch friction materials have reduced engagement characteristics. Once the fluid reaches operating temperature, the TCM transitions to its normal shift calibration.

29. A — Removing the fuel pump fuse or relay and running the engine until it stalls is the safest and most controlled method to relieve fuel system pressure. The engine consumes the fuel in the rail and lines through normal combustion, reducing pressure to near zero without exposing the technician to pressurized fuel spray. Cranking for a few additional seconds after the stall ensures residual pressure is fully dissipated. This method avoids the mess and fire risk of cracking open a pressurized fuel fitting.

30. C — Tire pressure must always be set to the manufacturer's specification when the tires are cold (before driving or after sitting for 3+ hours). Overinflating to prevent the cold-weather TPMS warning causes the center of the tread to bow outward, concentrating wear in the center strip and reducing the tire's contact patch — which decreases traction and increases stopping distance. The correct solution is to set cold pressures to the placard specification on a cold morning, which ensures the tires are at the correct pressure under the conditions the TPMS monitors.

31. B — Parts washing solvent tanks contain flammable petroleum-based or aqueous solvents that pose both fire and health hazards. The fusible-link lid is a fire protection feature: a heat-sensitive element holds the lid open during use, and if a fire occurs, the element melts and the spring-loaded lid closes automatically, smothering the flames. Gloves protect the technician's skin from chemical absorption, and ventilation prevents inhalation of solvent vapors. These safety features are OSHA-mandated for any shop that uses solvent tanks.

32. D — After eliminating the common lean-code causes (vacuum leaks via smoke test, fuel pressure, MAF sensor), the technician should investigate less-obvious sources. An exhaust leak upstream of the Bank 1 O2 sensor is a frequently missed cause: during the exhaust pulse cycle, negative-pressure waves at the leak point draw ambient air into the exhaust stream. This additional oxygen reaches the O2 sensor, which reads a lean condition. The PCM adds fuel to compensate, fuel trims go positive, and P0171 sets — even though the engine is actually running at the correct mixture.

33. A — The shop assumes full responsibility for every vehicle in its custody. Leaving windows down overnight and allowing rain damage is a clear case of negligence during care, custody, and control. The correct response is immediate transparency: inform the customer and management, thoroughly dry ALL affected areas (including under carpets and seats where electronic modules may be located), inspect for water damage to electrical components, and accept financial responsibility for any remediation or damage. Concealment is both unethical and creates far greater liability if discovered later.

34. C — With the fan working, the thermostat replaced, and coolant level correct, the remaining cooling system component that determines heat rejection capacity is the radiator itself. Internally, sediment, corrosion, and scale can block individual tubes, reducing the radiator's effective heat transfer surface area. Externally, debris (bugs, leaves, cotton from cottonwood trees, road grime) packed between the condenser and radiator blocks airflow through the core. At idle/low speed where airflow is fan-dependent, even partial blockage can tip the system into overheating territory.

35. B — Push-button start vehicles can continue running without the key fob in proximity — the engine only needs the fob for initial authentication. If a customer exits the vehicle in an attached garage and takes the fob inside, the engine continues running indefinitely, filling the garage with carbon monoxide. CO is odorless and can migrate into the living space through shared walls, doors, and HVAC systems. Some newer vehicles have an automatic shutoff timer, but not all do. This is a legitimate life-safety issue that the technician should proactively discuss with keyless-start vehicle owners.

36. D — Ride height directly determines suspension geometry — camber, caster, and toe angles all change as the vehicle sits higher or lower. If the left front is 0.75 inches lower than the right, a worn or broken spring, collapsed strut, or bent suspension component has altered the geometry on that corner. Aligning the vehicle in this condition produces angles that are "correct" only at the current abnormal ride height. When the vehicle loads up or rebounds, the angles shift out of specification. The height discrepancy must be corrected FIRST for the alignment to remain valid.

37. A — The distinction between "recommended" and "required" is precise and important. "Premium recommended" means the engine is calibrated to take advantage of premium fuel's higher octane rating for maximum performance, but the PCM has sufficient knock detection and timing retard capability to

safely run on regular fuel — at the cost of reduced horsepower and potentially slightly lower fuel economy. "Premium required" means the engine's compression ratio is too high for regular fuel even with maximum knock protection, and using regular fuel risks engine damage.

38. C — Coolant (ethylene glycol) on a hot exhaust manifold creates two hazards. First, while ethylene glycol itself has a relatively high flash point (~232°F), the glycol decomposes on surfaces above 250°F into more volatile compounds, and the surrounding insulation, heat shields, and accumulated oil residue can ignite — creating a genuine fire risk. Second, the vaporized coolant and its decomposition products (including glycolic acid and oxalic acid) are toxic when inhaled. The HVAC cowl intake can draw these vapors directly into the cabin.

39. B — The drum-in-hat parking brake design places small brake shoes inside the rotor hat (the center section of the rear rotor). During rear brake pad replacement, the rotor must be removed — providing direct access to the parking brake shoes. This is the ideal time to inspect and replace worn parking brake shoes because re-accessing them later requires the same complete disassembly. Ignoring worn parking brake shoes during this service means the customer will eventually return with a parking brake complaint requiring the identical labor to be repeated.

40. D — The fuel tank pressure sensor is a dedicated input for the EVAP system — it monitors the sealed fuel tank's internal pressure to detect leaks during the OBD II EVAP monitor. The PCM closes the purge and vent solenoids to seal the tank, then watches the FTP sensor for pressure decay that would indicate a leak. This sensor has no role in fuel injection, transmission control, or engine performance — which is why a FTP circuit DTC produces no drivability symptoms. The customer won't notice anything wrong, but the vehicle will fail an emissions inspection.

41. A — Brake fluid is hygroscopic — it actively absorbs moisture from the atmosphere through microscopic passages in hoses, seals, and the reservoir cap diaphragm. As moisture content increases, the fluid's boiling point drops. DOT 3 fluid's dry boiling point of 401°F can drop below 284°F when saturated with moisture. During heavy braking, the fluid temperature in the caliper can exceed this wet boiling point, causing the fluid to vaporize (brake fade). The copper content test strips or boiling point testers provide objective measurement of the fluid's condition.

42. C — The washer fluid level sensor is a simple component — typically a float switch or a resistive probe — mounted inside the reservoir. When it fails (float sticks, probe corrodes, connector disconnects), it cannot detect the fluid level and continues to report "low" regardless of how full the reservoir is. Since all other washer functions work (pump runs, fluid sprays), the sensor is the isolated fault. No scan tool reset or reprogramming is involved — it's a straightforward sensor replacement or connector repair.

43. B — Technician A is correct. Most modern automatic belt tensioners include a visual wear indicator — a simple pointer-and-mark system that shows whether the tensioner arm is operating within its designed range. When the pointer moves outside the marked zone, it means the internal spring has lost tension, the belt has stretched, or both. This takes 5 seconds to check visually with no tools required. Technician B's method (measuring spring force) is valid but unnecessary when the visual indicator is available and is a much more complex procedure.

44. D — Head gasket replacement is an internal engine repair that requires cylinder head removal, surface inspection, and precise reassembly — work that falls under ASE A1 (Engine Repair), not G1 (Maintenance and Light Repair). The MLR technician performed their role correctly by diagnosing the problem — diagnostic testing IS within MLR scope. Referring the actual repair to a technician with the appropriate certification ensures the work is performed by someone with the training, experience, and credentials for internal engine repair.

45. C — Wheel lock lug nuts require a matching key pattern to remove. The first step is to check whether the customer has the key code card (usually provided in the glove box with the locks). With the code, a replacement key can be ordered from the lock manufacturer or dealer. Without it, a wheel lock removal tool set (which grips the external profile of the lock) can be used — but this typically damages the locking lugs, requiring replacement. The customer should be advised to keep the key code in a safe place and to consider switching to standard lug nuts if the key is repeatedly lost.

46. A — A steering wheel that was centered before a brake service and is now off-center indicates something in the steering geometry changed during the repair. The most common cause is accidental contact with a tie rod end while removing or installing the caliper, bracket, or rotor — even a slight rotation of a tie rod changes the toe setting on that side. The technician should check the toe and recenter the steering wheel before returning the vehicle, as the customer will immediately notice the change.

47. B — This is a battery capacity question disguised as a parasitic draw question. The 45 mA draw is within specification and would not drain a healthy battery in 3 days. However, a battery that has lost internal capacity through age, sulfation, or plate degradation may still pass a load test (which measures instantaneous current delivery) while having insufficient RESERVE capacity to sustain even a small draw for 72 hours. The battery is at the threshold of its serviceable life — it functions for daily driving but cannot handle extended sitting.

48. D — White smoke that persists beyond the normal 1–2 minute condensation burn-off during warm-up, combined with a sweet smell and declining coolant level, is the definitive triad of internal coolant leakage. Coolant entering the combustion chamber through a failed head gasket, cracked head, or cracked block is vaporized during combustion and exits the tailpipe as sweet-smelling white steam.

Normal condensation smoke is odorless and clears quickly. The persistence, the smell, and the coolant loss together confirm the diagnosis.

49. C — The three-C format (Concern, Cause, Correction) is the industry-standard documentation method. The customer's CONCERN is recorded in their own words ("car makes a noise when I turn"). The CAUSE is the technician's diagnostic finding ("worn right front wheel bearing with 0.005" endplay exceeding 0.002" specification"). The CORRECTION is the specific repair performed ("replaced right front hub bearing assembly, torqued axle nut to 185 ft-lbs, road tested and verified noise eliminated"). This complete record protects against warranty claims, comebacks, and legal disputes.

50. A — Intermittent electrical faults that occur only under vibration are caused by connections that have adequate contact when stationary but briefly open or short when physically disturbed. The wiggle test systematically reproduces this condition in a controlled environment: the technician manipulates each connector, harness section, and ground point while watching a DMM, test light, or scan tool PID for the moment the fault appears. When the wiggle at a specific location causes the fault, the defective connection is identified. This is far more efficient than driving on rough roads hoping to catch the fault.

51. B — A second opinion must be an INDEPENDENT diagnosis — not a rubber stamp of the first shop's conclusion. The technician should approach the vehicle as if no prior diagnosis exists: verify the customer's complaint, perform their own compression test, leak-down test, and visual inspection, and reach their own conclusion based on their own findings. If the diagnosis matches the first shop's, the customer gains confidence. If it differs, the customer has valuable information. Either way, the customer deserves an objective, unbiased evaluation.

52. D — Radar-based AEB systems transmit electromagnetic waves that bounce off objects and return to the sensor. Large metal structures like bridge overpasses, overhead signs, and guardrails can create strong radar reflections that the system momentarily interprets as obstacles in the vehicle's path. This is a known limitation of current radar technology — the system cannot always distinguish between a stationary overhead structure and an object in the roadway. Manufacturers address this through software updates that improve target classification algorithms.

53. C — Modern full synthetic oils are formulated with seal-compatible additive packages that are safe for ALL elastomeric seal materials used in automotive engines — including older nitrile, silicone, and fluorocarbon seals. The myth originated in the 1970s–1980s with early synthetic formulations that used ester-based compounds aggressive to some seal materials. Those formulations were discontinued decades ago. If an engine develops a visible leak after switching to synthetic, the seal was ALREADY deteriorating — the synthetic oil's superior detergent action may have cleaned away deposits that were masking the pre-existing leak.

54. A — A charging system that produces 14.4V with no load and drops to 13.9V under full electrical load is performing within normal specifications. The alternator is increasing its field current to produce more output, but the additional electrical demand naturally causes a slight voltage reduction. As long as the loaded voltage remains above approximately 13.2V, the alternator is adequately supplying all loads while maintaining sufficient voltage to charge the battery. A 0.5V drop under full load is an expected and acceptable characteristic.

55. B — Every vehicle is designed with specific jack points — reinforced areas of the body, frame, or subframe engineered to support the vehicle's weight safely under a concentrated jack pad. Using a jack at an undesignated point risks crushing rocker panels, bending floor pans, puncturing fuel lines, damaging brake lines, or collapsing body seams — any of which can cause the vehicle to fall off the jack. The owner's manual identifies the correct jack points, and the factory-supplied jack is designed to interface with those specific locations.