PRACTICE EXAM 3: ASE G1 SIMULATION — 55 QUESTIONS

1. Technician A says that a timing belt that has jumped one tooth will cause a nostart condition on most engines. Technician B says that a timing belt that has jumped one tooth can cause rough running and misfires without necessarily preventing the engine from starting. Who is correct?

A. Technician A only

B. Technician B only

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

2. A vehicle's automatic transmission hunts between 3rd and 4th gear while maintaining a steady speed on a slight incline. Which of the following is the MOST likely cause?

A. Worn 3rd gear clutch pack friction material

B. A misadjusted or malfunctioning throttle position sensor

C. An internally leaking torque converter clutch piston

D. Contaminated transmission fluid causing valve body sticking

3. All of the following conditions can cause a belt squeal during engine startup EXCEPT:

A. A worn automatic belt tensioner that cannot maintain proper tension

B. Coolant or oil contamination on the belt ribs

C. An overtensioned belt on a system with a manual adjustment

D. A misaligned accessory drive pulley

4. A technician is performing a cylinder leakage (leakdown) test. Compressed air is heard escaping from the tailpipe when cylinder number 2 is tested. Which of the following is indicated?

A. A leaking exhaust valve on cylinder 2

B. A leaking intake valve on cylinder 2

C. A blown head gasket between cylinder 2 and the cooling jacket

D. Worn piston rings on cylinder 2

5. A vehicle with an electronically controlled automatic transmission will not shift out of first gear. The speedometer also reads zero at all speeds. Which component failure would explain BOTH symptoms?

A. The transmission range sensor

B. The vehicle speed sensor

C. The output shaft seal

D. The transmission control module

6. During a routine oil change, a technician notices that the engine oil is a milky, tan color. Which of the following conditions does this MOST likely indicate?

A. Fuel dilution from a leaking fuel injector

B. Extended oil change interval beyond the manufacturer's recommendation

C. Use of an incorrect oil viscosity grade

D. Coolant mixing with the engine oil due to an internal gasket or component failure

7. A customer reports a pulsation in the brake pedal that occurs only during normal (nonABS) braking. Which of the following is the MOST likely cause?

A. A sticking caliper slide pin causing uneven pad wear

B. Worn brake pad friction material below minimum thickness

C. Excessive lateral runout or thickness variation in a brake rotor

D. A soft brake hose expanding under hydraulic pressure

8. Technician A says that replacing only the outer tie rod end requires a wheel alignment afterward. Technician B says that replacing a lower ball joint does NOT require a wheel alignment. Who is correct?

A. Technician A only

B. Technician B only

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

9. A customer states that the battery warning light illuminates intermittently while driving. The battery tests good and alternator output tests within specification at the shop. Which of the following should the technician inspect NEXT?

A. The charging system wiring and connections for looseness or corrosion

B. The battery temperature sensor for intermittent failure

C. The alternator pulley for a oneway clutch malfunction

D. The PCM for a software update affecting charge rate control

10. A vehicle's A/C compressor clutch engages but the air from the vents is not cold. Highside pressure is higher than normal and lowside pressure is also higher than normal. Which of the following is the MOST likely cause?

A. A system that is undercharged with refrigerant

B. A restricted orifice tube or expansion valve

C. An inoperative condenser cooling fan or airflow blockage at the condenser

D. A leaking compressor reed valve

11. While performing a brake inspection, a technician measures the brake drum diameter and finds it exceeds the maximum diameter specification cast into the drum. What is the correct action?

A. Machine the drum to restore a smooth friction surface

B. Install oversized brake shoes to match the enlarged drum diameter

C. Inspect the drum for heat cracks and reuse it if none are found

D. Replace the drum because it has exceeded the safe service limit

12. A vehicle with hydraulic powerassist brakes has a hard brake pedal that requires excessive force to stop. Engine vacuum is within specification. Which of the following is the MOST likely cause?

A. A leaking brake master cylinder internal seal

B. A failed brake booster check valve or diaphragm

C. A collapsed rubber brake hose on one front wheel

D. Excessively worn rear brake shoes reducing selfenergizing effect

13. A technician needs to remove a wheel lug nut that has been rounded off. Which of the following tools is MOST appropriate?

A. A damagednut extractor socket or a set of bolt extractors

B. An adjustable wrench tightened firmly on the nut flats

C. Locking pliers clamped to the nut with maximum force

D. A cold chisel and hammer to split the nut off the stud

14. Technician A says the primary purpose of the PCV system is to reduce hydrocarbon emissions from the crankcase. Technician B says the PCV system routes crankcase vapors back into the exhaust manifold for burning. Who is correct?

A. Technician A only

B. Technician B only

C. Neither Technician A nor Technician B

D. Both Technician A and Technician B

15. A vehicle's engine overheats in stopandgo traffic but maintains normal temperature at highway speed. The coolant level is full. Which of the following is the MOST likely cause?

A. A thermostat that is stuck partially open

B. A water pump with a corroded impeller producing low flow volume

C. A restricted upper radiator hose collapsing under suction

D. A cooling fan that is inoperative or not engaging at the proper temperature

16. A technician is diagnosing a vehicle with a cranknostart condition. There is good spark at the spark plugs and fuel pressure is within specification. A scan tool shows no DTCs. Which of the following should the technician check NEXT?

A. The ignition module signal to the coil

B. The mechanical timing of the engine to verify correct valve and ignition event timing

C. The fuel pump relay for intermittent contact failure

D. The crankshaft position sensor waveform for signal dropout

17. Which of the following fluids requires the MOST careful handling and disposal due to its toxic and hygroscopic properties?

A. Glycolbased brake fluid

B. Automatic transmission fluid

C. R134a refrigerant

D. DOT 5 silicone brake fluid

18. A technician notices uneven wear on the inside of a front tire during a tire rotation. The outside of the tire shows minimal wear. All tire pressures are correct. Which alignment angle is MOST likely out of specification?

A. Positive caster on the affected side

B. Excessive toeout on the front axle

C. Positive camber on the affected side

D. Excessive negative camber on the affected side

19. A customer complains that the vehicle's automatic headlights stay on for several minutes after the ignition is turned off. Which of the following is correct?

A. The headlight switch has an internal short keeping the relay energized

B. The ambient light sensor is faulty and reporting darkness to the BCM

C. This is a normal feature called "escort" or "followmehome" lighting on many vehicles

D. The body control module is malfunctioning and must be reprogrammed

20. A vehicle equipped with a cabin air filter emits a musty odor from the HVAC vents when the blower is turned on. The filter was replaced 3,000 miles ago. Which of the following is the MOST likely cause?

A. A contaminated cabin air filter that was installed incorrectly, bypassing the seal

B. Mold or mildew growth on the evaporator core surface

C. A coolant leak inside the heater core producing a sweetsmelling residual

D. A missing HVAC case drain allowing standing water in the blower housing

21. A vehicle pulls to the left during acceleration but tracks straight during coasting and braking. Steering and suspension components are not worn. Which of the following is the MOST likely cause?

A. A left front tire with lower pressure than the right front

B. Unequal front CV axle lengths causing torque steer

C. A worn left front wheel bearing

D. A shifted subframe misaligning the steering geometry

22. Technician A says that a stuckopen engine thermostat will cause the engine to overheat. Technician B says that a stuckopen thermostat will cause the heater to produce less heat than normal. Who is correct?

A. Technician B only

B. Technician A only

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

23. A vehicle owner asks why the tire pressure monitoring system (TPMS) light flashes for approximately 60 seconds after starting the vehicle and then stays on solid. What does this pattern indicate?

A. One or more tires are below the recommended inflation pressure

B. The TPMS sensors need to be recalibrated after a recent tire rotation

C. The vehicle's battery voltage is too low for the TPMS module to function

D. There is a fault in the TPMS system itself, such as a dead sensor or module error

24. A technician connects a scan tool to a vehicle with a P0171 (System Too Lean — Bank 1) DTC. Which of the following conditions would NOT typically cause this code?

A. A vacuum leak downstream of the mass airflow sensor

B. A dirty or contaminated mass airflow sensor reading lower than actual airflow

C. A stuckopen fuel pressure regulator causing higherthannormal fuel pressure

D. A clogged fuel filter restricting fuel delivery to the injectors

25. A technician is replacing the front struts on a MacPherson strutequipped vehicle. Which safety precaution is MOST critical during this procedure?

A. Disconnecting the battery before removing any suspension components

B. Using a proper spring compressor to safely remove the coil spring from the strut assembly

C. Applying threadlocking compound to all strut mounting bolts

D. Replacing the sway bar links at the same time to prevent uneven handling

26. During a multipoint inspection, a technician discovers that the coolant in the overflow reservoir appears oily with a dark film floating on the surface. What does this MOST likely indicate?

A. Engine oil or transmission fluid is leaking into the cooling system

B. The coolant has exceeded its service life and the corrosion inhibitors have failed

C. The overflow reservoir cap is allowing air contamination into the coolant

D. A deteriorating coolant hose is shedding rubber particles into the system

27. A vehicle's charging system produces 14.2 volts at the alternator B+ terminal, but only 12.8 volts is measured at the battery positive terminal with the engine running. What is the MOST likely cause?

A. An internally faulty alternator with excessive AC ripple

B. A sulfated battery that cannot accept a charge

C. A faulty voltage regulator commanding reduced output

D. Excessive resistance in the charging circuit wiring between the alternator and the battery

28. A vehicle with fourwheel disc brakes has a spongy brake pedal after a brake caliper replacement. The technician has bled the brakes using the standard sequence. The pedal remains spongy. Which of the following is the MOST likely cause?

A. The replacement caliper is defective with an oversized bore

B. The brake master cylinder pushrod is out of adjustment

C. Air is still trapped in the system, requiring a pressure or vacuum bleeding procedure

D. The brake fluid viscosity is too low for the ambient temperature

29. Technician A says that a scan tool can be used to read the engine coolant temperature value while diagnosing an overheating complaint. Technician B says that the scan tool temperature reading should be compared to an infrared thermometer reading at the thermostat housing to verify sensor accuracy. Who is correct?

A. Both Technician A and Technician B

B. Technician A only

C. Technician B only

D. Neither Technician A nor Technician B

30. A manual transmission vehicle requires excessive clutch pedal force to disengage the clutch. The clutch hydraulic system has been bled and shows no air or leaks. Which of the following is the MOST likely cause?

A. A worn clutch disc with insufficient friction material

B. A contaminated clutch disc causing grabbing and chatter

C. A weak clutch return spring on the pedal assembly

D. A worn or binding clutch release bearing, fork, or pivot

31. A technician is performing a voltage drop test on the battery cable ground circuit during cranking. The voltmeter reads 0.8 volts. Which of the following is correct?

A. This is an acceptable reading for the ground circuit during cranking

B. The reading indicates excessive resistance in the ground circuit that requires repair

C. The reading is too low and indicates a short circuit in the ground cable

D. The reading is normal if the ambient temperature is below 32°F

32. A scan tool reveals a pending DTC P0442 (EVAP System Small Leak Detected). Which of the following is the MOST common cause of this code?

A. A faulty EVAP canister purge solenoid stuck in the open position

B. A cracked charcoal canister allowing vapor to escape

C. A loose, damaged, or improperly sealed fuel filler cap

D. A leaking fuel tank pressure sensor Oring

33. A vehicle equipped with ABS, traction control, and stability control has the ABS light, traction control light, and stability control light all illuminated simultaneously. Which of the following is the MOST likely explanation?

A. Three separate faults have occurred in each system independently

B. The brake fluid has become contaminated causing all three modules to malfunction

C. A single fault in a shared component, such as a wheel speed sensor, has disabled all three systems

D. The vehicle's battery voltage dropped below the minimum threshold for all three modules

34. A technician is checking drive belt condition using a belt wear gauge on a serpentine belt. The gauge sits flush with the top of the ribs. What does this indicate?

A. The belt ribs are worn beyond the service limit and the belt must be replaced

B. The belt is in acceptable condition and does not require replacement

C. The belt tensioner spring has weakened, causing the belt to ride too deep in the pulleys

D. The pulleys are worn and need replacement even if the belt is new

35. A vehicle's catalytic converter glows redhot after extended idling. Which of the following conditions could cause this?

A. A restricted exhaust system downstream of the converter

B. A lean fuel condition from a massive vacuum leak

C. A faulty catalytic converter that has exceeded its operating life

D. Engine misfires sending unburned fuel into the converter where it ignites

36. A technician is replacing the rear differential fluid in a limitedslip differential. What additional step is required compared to a standard open differential?

A. The differential must be preloaded with a dial indicator before refilling

B. A friction modifier additive must be included per the manufacturer's specification

C. The differential must be completely disassembled for inspection during every fluid change

D. Only full synthetic 75W140 gear oil may be used regardless of manufacturer specification

37. A customer brings in a vehicle with a complaint of poor fuel economy. The air filter is clean, the tires are properly inflated, and the engine has no DTCs. Which of the following should the technician check NEXT?

A. The engine thermostat for correct operating temperature

B. The exhaust system for restrictions

C. The transmission torque converter for slippage

D. The catalytic converter for efficiency

38. A vehicle has a clicking sound from the front end when making sharp, slow turns in a parking lot. The sound is present in both left and right turns. Which of the following is the MOST likely cause?

A. Worn front strut upper mounts

B. Loose front wheel lug nuts

C. Worn outer CV joints on both front axle shafts

D. Dry front sway bar bushings

39. A technician measures the cold tire pressures on a vehicle and finds them at 32 psi on all four tires. The door jamb placard specifies 35 psi. The customer states the tires were set to 35 psi last week when the weather was warmer. What is the correct explanation?

A. The tire pressure sensors have lost their calibration and are reading incorrectly

B. The tires have slow leaks at the valve stems that must be repaired

C. The tire pressure gauge being used is inaccurate and should be replaced

D. Tire pressure decreases approximately 1 psi for every 10°F drop in ambient temperature

40. Technician A says that conventional (green) coolant can be safely mixed with extendedlife (orange/red OAT) coolant in an emergency. Technician B says that mixing coolant types can compromise the corrosion protection of both coolants. Who is correct?

A. Technician A only

B. Technician B only

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

41. A vehicle with electric power steering (EPS) has heavierthannormal steering effort at all speeds. There are no warning lights illuminated and the scan tool shows no DTCs. Which of the following is the MOST likely cause?

A. Low battery voltage or a poor electrical connection at the EPS motor

B. A worn steering gear with excessive internal clearance

C. An overinflated tire condition increasing steering effort

D. A seized intermediate steering shaft universal joint

42. A technician is diagnosing a nostart condition on a vehicle with a security (antitheft) system. The engine cranks normally, but the security indicator light on the dash is flashing rapidly. What is the MOST likely cause?

A. A faulty starter motor solenoid not engaging the flywheel

B. A clogged fuel filter preventing adequate fuel delivery

C. A failed crankshaft position sensor not generating a signal

D. The antitheft system is not recognizing the key or key fob, preventing fuel or spark delivery

43. A technician notices that one front brake rotor has a blue discoloration on the friction surface. What does this condition indicate?

A. The rotor was manufactured with a cosmetic coating that discolors with initial use

B. The brake pad material has transferred unevenly to the rotor surface

C. The rotor has been subjected to excessive heat, likely from a sticking caliper or severe braking

D. Moisture contamination has caused surface oxidation that will selfcorrect with use

44. A customer asks whether it is necessary to replace the timing belt on their vehicle at the manufacturer recommended interval if the belt shows no visible signs of damage. Which response is correct?

A. The belt does not need replacement if there are no visible cracks or damage present

B. The belt should be replaced at the manufacturer's recommended interval regardless of appearance because internal deterioration is not visible

C. The belt should be inspected with a belt wear gauge and replaced only if measurements are out of specification

D. The timing belt replacement interval is only a suggestion; the belt can safely run until it shows physical distress

45. Technician A says that an exhaust leak upstream of the oxygen sensor can set a lean fuel trim DTC. Technician B says that an exhaust leak upstream of the oxygen sensor will have no effect on fuel trim because the leak is after combustion. Who is correct?

A. Technician A only

B. Technician B only

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

46. A technician is testing a fuel injector's electrical operation using a noid light. The noid light does not flash while cranking. Which of the following is the MOST likely cause?

A. A clogged fuel injector that is mechanically stuck closed

B. Fuel pressure that is below the minimum specification for injector operation

C. A shorted fuel injector coil with near zero resistance

D. A missing PCM injector driver signal, open circuit, or no power to the injector connector

47. A vehicle with rackandpinion steering develops a clunking noise when turning the steering wheel at low speed or over bumps. The inner tie rod ends are tight. Which of the following is the MOST likely cause?

A. A worn power steering pump with internal cavitation

B. Low power steering fluid causing air ingestion

C. Worn rack mounting bushings or loose rack mounting bolts

D. A cracked steering rack housing allowing internal fluid bypass

48. A technician replaces the rear brake shoes on a drum brake system. After reassembly, the parking brake does not hold the vehicle on an incline. Which of the following is the MOST likely cause?

A. The parking brake cable needs to be readjusted to compensate for the new thicker shoe material

B. The rear brake shoes were installed in the wrong positions (primary and secondary reversed)

C. The brake drum is outo fround and not contacting the shoes evenly

D. The new brake shoes require a 500mile breakin period before the parking brake will hold

49. A scan tool shows shortterm fuel trim (STFT) oscillating rapidly between positive and negative values at idle. Longterm fuel trim (LTFT) is near zero. What does this indicate?

A. The oxygen sensor is responding slowly and needs replacement

B. The fuel system is in normal closedloop operation and functioning correctly

C. The mass airflow sensor is intermittently failing

D. The catalytic converter is operating below efficiency threshold

50. A vehicle's air conditioning system has been converted from R12 to R134a. The system cools, but the discharge air temperature is warmer than expected. Which of the following is the MOST likely cause of reduced cooling performance after a retrofit?

A. The system has a refrigerant overcharge from using the original R12 capacity specifications

B. The new R134a compressor oil is incompatible with the original system seals

C. The condenser fan is running in reverse due to incorrect wiring during the retrofit

D. R134a is less efficient than R12 in systems not originally designed for it, and the condenser may be undersized

51. A technician is inspecting the underside of a vehicle and finds a wetted area on the driveshaft near the transmission yoke. Which of the following is the MOST likely cause?

A. A worn driveshaft center support bearing leaking its internal grease

B. A cracked transmission case near the extension housing

C. A leaking transmission rear seal at the extension housing

D. Normal condensation from temperature changes during driving

52. A vehicle with daytime running lights (DRLs) has one DRL that is significantly dimmer than the other. The headlights function normally in all other modes. Which of the following is the MOST likely cause?

A. A faulty DRL control module sending incorrect voltage to both sides

B. A poor ground connection or corroded socket on the dim side

C. A failing alternator with low output that affects only the DRL circuit

D. An incorrect bulb wattage installed on the brighter side

53. During a state emissions test, a vehicle fails for high NOx readings. All other emissions are within specification. Which of the following is the MOST likely cause?

A. An EGR system fault preventing exhaust gas recirculation and failing to reduce combustion temperatures

B. A clogged catalytic converter that cannot oxidize the excess NOx

C. A rich fuel condition causing incomplete combustion

D. A leaking EVAP system allowing fuel vapors to enter the intake manifold

54. A customer brings in a vehicle with a complaint that the transmission shifts harshly into every gear. The transmission fluid level and condition are normal. A scan tool shows no DTCs. Which of the following should the technician investigate?

A. The torque converter clutch solenoid for an intermittent electrical short

B. The transmission filter for excessive debris causing a restriction

C. The valve body for stuck or worn pressure regulator components

D. The engine mounts, as a broken mount transfers engine movement that mimics harsh shifting

55. A technician is testing the cranking amperage draw of a starter motor. The specification calls for a maximum of 200 amps. The meter reads 310 amps during cranking and the engine turns over slowly. Which of the following is the MOST likely cause?

A. A fully charged battery providing excessive current to the starter

B. A loose positive battery cable creating intermittent contact

C. Excessive mechanical resistance or internal starter motor failure causing high current draw

D. An undersized replacement battery that cannot regulate current flow to the starter

Practice Exam 3: Answer Key and Full Explanations

1. D — Neither technician is fully correct as stated. A timing belt that has jumped one tooth will typically cause rough running, misfires, and reduced power, but it CAN also prevent starting depending on the engine design — particularly on interference engines where valve-to-piston contact may occur. Because the outcome depends on the specific engine, neither blanket statement is universally accurate, making "Neither" the best answer on this style of ASE question.

2. B — The throttle position sensor (TPS) provides the transmission control module with driver demand information to determine shift points. A misadjusted or erratic TPS signal near the shift threshold causes the transmission to repeatedly upshift and downshift (hunt) because the controller cannot determine whether the driver is requesting light or moderate throttle. Recalibrating or replacing the TPS resolves the shift hunting.

3. C — An over-tensioned belt causes accelerated wear and bearing damage, but it does NOT cause belt squeal. Squeal occurs when the belt slips on the pulleys, which happens with insufficient tension, contamination, misalignment, or a worn tensioner that cannot maintain grip. Over-tensioning actually prevents slippage, making it the exception in this list.

4. A — During a leak-down test, air escaping from the tailpipe can only reach the exhaust system through an open path past the exhaust valve. This indicates the exhaust valve on that cylinder is not sealing properly — either from a burned valve face, carbon buildup preventing full closure, or a bent valve. Air heard at the intake indicates an intake valve leak; bubbles in the coolant indicate a head gasket failure.

5. B — The vehicle speed sensor (VSS) provides speed data to both the transmission control module for shift scheduling and the instrument cluster for the speedometer. A failed VSS simultaneously explains the zero-speed reading on the speedometer and the transmission remaining locked in first gear, since the controller has no speed reference to command upshifts. This two-symptom, one-cause pattern is a classic ASE diagnostic question.

6. D — Milky, tan-colored engine oil is the hallmark of coolant intrusion into the lubrication system. The most common causes are a failed head gasket, a cracked cylinder head, or a cracked block that allows pressurized coolant to mix with oil. This condition requires immediate attention because the emulsified mixture loses its lubricating properties and will rapidly destroy engine bearings.

7. C — Brake pedal pulsation during normal braking is caused by excessive lateral runout or thickness variation (parallelism issue) in a brake rotor. As the rotor turns, the uneven surface pushes the brake pads in and out, transmitting a pulsation through the hydraulic system to the pedal. Measuring runout

with a dial indicator and thickness variation with a micrometer at multiple points around the rotor confirms the diagnosis.

8. A — Technician A is correct: replacing an outer tie rod end changes the effective length of the steering linkage, which directly alters the toe setting, so alignment is required. Technician B is incorrect: replacing a lower ball joint changes the geometry of the suspension, which can affect camber and caster angles, also requiring alignment. Only Technician A made a correct statement.

9. A — An intermittent battery warning light with a battery and alternator that both test good points to a connection issue in the charging circuit. Loose, corroded, or damaged wiring at the alternator output terminal, fusible link, or battery terminals can cause momentary voltage drops that trigger the warning light under certain electrical loads or vibration. A thorough visual and voltage-drop inspection of all charging circuit connections typically reveals the fault.

10. C — When both the high-side and low-side pressures are above normal, the system cannot reject heat from the refrigerant at the condenser. The most common cause is insufficient airflow across the condenser — either from an inoperative cooling fan, a blocked condenser surface (bugs, debris, bent fins), or a missing air dam that directs airflow. Without adequate heat rejection, the refrigerant does not condense efficiently, and the entire system runs at elevated pressures.

11. D — The maximum diameter specification cast into a brake drum is an absolute safety limit. Once a drum exceeds this dimension — whether from wear or machining — it is too thin to safely dissipate heat and maintain structural integrity during braking. No amount of machining can restore it, and oversized shoes do not exist as a legitimate repair. The drum must be replaced.

12. B — A hard brake pedal with adequate engine vacuum points directly to the brake booster as the fault. The booster uses engine vacuum to multiply the force applied by the driver's foot. If the booster's internal diaphragm has ruptured or the check valve has failed, vacuum cannot be maintained in the booster chamber, and the driver must apply unassisted mechanical force to the master cylinder. Testing vacuum at the check valve and comparing pedal effort with the engine on versus off confirms the diagnosis.

13. A — A damaged-nut extractor socket (sometimes called a twist socket or turbo socket) is specifically designed to grip rounded-off fasteners by biting into the remaining material with spiral flutes. It provides the most controlled and effective removal without damaging the stud or surrounding components. Adjustable wrenches and pliers risk further rounding the nut, and a chisel can damage the stud, brake components, or wheel.

14. A — Technician A is correct. The PCV (Positive Crankcase Ventilation) system's primary purpose is to prevent hydrocarbon-rich blowby gases from escaping the crankcase into the atmosphere. Before PCV systems were mandated in the early 1960s, crankcase vapors vented directly to the atmosphere through a road draft tube — making the crankcase one of the largest single sources of hydrocarbon emissions on every vehicle. The PCV system eliminated this by capturing those vapors and routing them back into the engine to be burned during normal combustion.

15. D — An engine that overheats only in stop-and-go traffic but runs cool at highway speed has adequate cooling capacity from ram air at speed but lacks forced airflow at low speed. This classic pattern points to a cooling fan that is not turning on when needed — either because of a failed fan motor, a faulty fan relay, a bad coolant temperature sensor signal, or a failed fan clutch. The fan's job is to pull air through the radiator when the vehicle is not moving fast enough to create its own airflow.

16. B — With confirmed spark, confirmed fuel pressure, and no DTCs, the engine has the two essential ingredients for combustion but is not starting. The next logical step is verifying that these events are happening at the correct time — meaning the mechanical timing (camshaft-to-crankshaft relationship) must be checked. A jumped timing belt or chain can produce spark and fuel delivery at the wrong point in the cycle, preventing combustion despite both systems appearing to function.

17. A — Glycol-based brake fluid (DOT 3 and DOT 4) is toxic if ingested, can cause skin and eye irritation, damages painted surfaces and clear coats on contact, and is highly hygroscopic — meaning it aggressively absorbs moisture from the atmosphere. It requires careful handling, storage in sealed containers, and proper disposal as hazardous waste. DOT 5 silicone fluid is non-hygroscopic and less toxic by comparison.

18. D — Excessive negative camber tilts the top of the tire inward, concentrating the vehicle's load on the inside edge of the tread. Over time, this produces accelerated wear on the inner tread surface while the outer edge remains relatively unworn. This specific wear pattern — inner wear only, with correct tire pressures — is the textbook signature of excessive negative camber.

19. C — Many modern vehicles are equipped with a "follow-me-home" or "escort" lighting feature that intentionally keeps the headlights on for a set time after the ignition is turned off to illuminate the path from the vehicle to a building. This is a normal, factory-programmed function controlled by the BCM, not a malfunction. The duration is often adjustable through the vehicle's settings menu or a scan tool.

20. B — A musty, mildew-type odor from the HVAC vents — even with a fresh cabin air filter — is almost always caused by mold and mildew growing on the surface of the A/C evaporator core. Condensation naturally forms on the cold evaporator during A/C operation, and in humid conditions,

this moisture provides an ideal environment for biological growth. Treating the evaporator with an antimicrobial spray and ensuring the HVAC case drain is clear resolves the odor.

21. B — A pull during acceleration only — not during coasting or braking — is the classic symptom of torque steer. In front-wheel-drive vehicles with unequal-length CV axle shafts (half shafts), the longer shaft has more flex and wind-up under power, creating unequal torque delivery to the front wheels. This differential torque causes the vehicle to pull toward the side with the shorter shaft during hard acceleration.

22. A — Technician B only is correct. A stuck-open thermostat allows coolant to circulate through the radiator continuously, preventing the engine from reaching full operating temperature. This means less heat is available for the heater core, resulting in reduced cabin heat output. Technician A is incorrect because a stuck-open thermostat causes under-cooling (the engine runs too cold), not overheating — it is a stuck-closed thermostat that causes overheating.

23. D — The TPMS warning light behavior is standardized: a light that flashes for 60–90 seconds at startup and then remains on solid indicates a system fault — such as a dead sensor battery, a sensor that has lost communication, or a TPMS module error. A steady light without flashing indicates low tire pressure only. This flash-then-solid pattern tells the technician to diagnose the TPMS hardware rather than simply checking tire pressures.

24. C — A stuck-open fuel pressure regulator would cause fuel pressure to be LOWER than specification (because it bleeds off excess fuel), which would cause a lean condition — and WOULD logically set a P0171 code.

25. B — The coil spring in a MacPherson strut assembly stores an enormous amount of potential energy. If the spring is removed without a proper spring compressor, it can release violently and cause severe injury or death. Using a quality spring compressor rated for the application and following the manufacturer's procedure is the single most critical safety step during strut replacement. No other precaution in this service carries the same risk to life.

26. A — An oily film floating on the surface of coolant in the overflow reservoir indicates that oil is entering the cooling system. The most common causes are a failed engine oil cooler (which uses coolant for heat exchange), a cracked head gasket allowing oil passage to cross into the coolant jacket, or on vehicles with integrated transmission coolers, a failed radiator tank allowing ATF into the coolant side. Further diagnosis is needed to identify the specific source.

27. D — A 1.4-volt drop between the alternator output terminal and the battery positive post means voltage is being lost in the wiring, fusible links, connectors, or junction points between the two. The maximum acceptable voltage drop in the charging circuit is typically 0.3–0.5 volts. A 1.4-volt drop starves the battery of charging voltage and will cause chronic undercharging. A systematic voltage drop test along the circuit from alternator to battery pinpoints the exact location of the resistance.

28. C — A spongy brake pedal after caliper replacement, despite bleeding, indicates air remains trapped in the hydraulic system. Certain brake system designs with complex ABS hydraulic modulators or awkward line routing make gravity or manual bleeding insufficient to purge all air. A pressure bleeder or vacuum bleeder forces fluid through the system more thoroughly, displacing trapped air pockets that conventional bleeding misses.

29. A — Both technicians are correct. A scan tool is an essential diagnostic tool that displays the real-time ECT sensor value the PCM is using for fuel and cooling fan decisions. Comparing that scan tool reading to an independent measurement from an infrared thermometer aimed at the thermostat housing verifies whether the sensor is reporting accurately. If the two readings disagree significantly, the ECT sensor or its circuit is faulty.

30. D — With the hydraulic system confirmed to be functioning properly (no air, no leaks), excessive clutch pedal effort points to a mechanical binding in the release mechanism. A worn clutch release (throw-out) bearing, a binding or misaligned clutch fork, or a dry pivot ball creates friction and resistance that the driver must overcome with additional pedal force. Lubricating or replacing the worn mechanical components restores normal pedal effort.

31. B — The maximum acceptable voltage drop on the ground side of a starter circuit is 0.2–0.3 volts. A reading of 0.8 volts indicates significant resistance in the ground path — from corroded cable ends, a damaged ground strap, or poor contact between the engine block ground and the battery negative terminal. This resistance reduces the current available to the starter motor, contributing to slow cranking and hard starting.

32. C — A P0442 indicates a small leak in the EVAP system, and statistically, the most common cause is a loose, cracked, or worn fuel filler cap that does not seal the fuel tank properly. This is such a frequent cause that many repair manuals and diagnostic flowcharts list "inspect and replace fuel cap" as the first diagnostic step. Clearing the code and driving to see if it returns after cap replacement is the standard approach before pursuing more invasive EVAP testing.

33. C — ABS, traction control, and stability control all rely on wheel speed sensor data as a fundamental input. When a single wheel speed sensor fails or loses its signal, all three systems lose the data they need to function, and the vehicle's control modules disable all three systems simultaneously and illuminate their respective warning lights. This shared-dependency design means a single sensor fault cascades across all three systems.

34. A — A belt wear gauge is designed so that it should NOT sit flush with the rib tops if the belt is in good condition — it should ride above them. When the gauge sits flush or drops below the rib surfaces, it indicates that the ribs have worn down past the service limit and the belt has lost enough material to risk slipping or failing. The belt must be replaced.

35. D — A catalytic converter glows red-hot because raw, unburned fuel is entering it and combusting inside the converter substrate. Engine misfires — caused by a fouled spark plug, failed ignition coil, or other ignition/fuel fault — send unburned hydrocarbons directly into the exhaust where the catalyst oxidizes them, generating extreme heat. This condition can destroy the converter and poses a fire risk if the vehicle is parked over combustible material.

36. B — Limited-slip differentials use clutch packs or cone-type friction elements to transfer torque between the axle shafts. These friction surfaces require a specific friction modifier additive in the gear oil to prevent clutch chatter during turns. Without the additive, the clutch packs grab and release erratically, producing a shuddering or chattering sensation — especially noticeable during low-speed turns in parking lots.

37. A — An engine thermostat that is stuck partially or fully open prevents the engine from reaching its designed operating temperature. When the engine runs too cold, the PCM remains in open-loop or enriched warm-up fueling longer than necessary, increasing fuel consumption. Checking the thermostat opening temperature — by monitoring coolant temperature on a scan tool during warm-up — is a quick, low-cost diagnostic step that frequently explains poor fuel economy with no DTCs present.

38. C — A rhythmic clicking sound during slow, sharp turns is the signature symptom of worn outer CV joints on a front-wheel-drive vehicle. The clicking occurs because the worn joint has excessive internal play that allows the balls to momentarily lose contact with the cage and tracks under the high operating angle of a full steering lock turn. The symptom being present in both directions indicates both outer joints are worn, which is common on higher-mileage vehicles.

39. D — Tire pressure follows Gay-Lussac's Law: as temperature decreases, the pressure of a contained gas decreases proportionally. The widely used rule of thumb is approximately 1 psi of pressure change

for every 10°F change in ambient temperature. A 30°F temperature drop from a warm week to a cold week explains the 3 psi decrease from 35 psi down to 32 psi — a normal physical response, not a leak or sensor error.

40. B — Technician B is correct. Mixing conventional (IAT) green coolant with extended-life (OAT) orange or red coolant causes the different additive chemistries to react and form gels or precipitates that clog passages and neutralize the corrosion inhibitors of both coolant types. The result is reduced cooling system protection, potential overheating from flow restrictions, and accelerated corrosion of metal components. While a small amount of mixing may occur in a true emergency, it compromises the system and a complete flush should follow as soon as possible.

41. A — Electric power steering systems are entirely dependent on electrical power to the EPS motor and control module. Low battery voltage, a corroded connector, or a high-resistance connection at the EPS motor reduces the current available to generate steering assist, resulting in heavier-than-normal steering effort. Because the system may still function at reduced capacity without setting a DTC, checking voltage supply and ground connections is the correct first step.

42. D — When the security indicator light flashes rapidly during cranking, the anti-theft immobilizer system is actively preventing the engine from starting by disabling fuel delivery, ignition, or both. This occurs when the system does not recognize the transponder chip in the key, the key fob battery is dead, or the immobilizer antenna ring around the ignition cylinder has failed. The engine cranks because the starter circuit is separate from the immobilizer, but combustion is intentionally prevented.

43. C — Blue or purple discoloration on a brake rotor's friction surface is a heat tint that indicates the rotor has been exposed to temperatures high enough to change the metallurgical structure of the cast iron. Common causes include a sticking caliper that keeps the pads applied, a collapsed brake hose, or aggressive driving with repeated hard stops. A rotor that has been overheated to this degree may have developed hard spots and should be inspected for thickness variation and runout or replaced.

44. B — Timing belts are made of rubber-reinforced materials that deteriorate internally over time due to heat cycling, chemical exposure, and age hardening — long before visible external damage appears. A belt that looks fine externally can have weakened internal tensile cords that fail without warning, and on an interference engine, belt failure causes catastrophic valve-to-piston contact. Replacing the belt at the manufacturer's recommended interval is non-negotiable preventive maintenance.

45. A — Technician A is correct. An exhaust leak upstream of (before) the oxygen sensor allows ambient air to be drawn into the exhaust stream during the low-pressure pulses of the exhaust cycle. The extra oxygen reaching the O2 sensor makes it report a lean condition, causing the PCM to add fuel

unnecessarily — driving positive fuel trim values and potentially setting a lean DTC. Technician B's claim that exhaust leaks have no effect is incorrect.

46. D — A noid light tests for the presence of the electrical pulse signal at the injector connector — it does not test fuel flow or mechanical injector function. If the noid light does not flash, the problem is electrical: either the PCM is not sending the injector driver pulse, there is an open circuit in the wiring between the PCM and the connector, or power is not reaching the injector connector at all. A clogged injector would still show a noid light flash because the electrical signal is present even if the injector is mechanically stuck.

47. C — A clunking noise from a rack-and-pinion steering system when turning at low speed or going over bumps — with tight inner tie rod ends — typically originates from worn or deteriorated rack mounting bushings or loose rack mounting bolts. These allow the entire rack assembly to shift slightly in its mounts during steering input or suspension travel, producing a distinct clunk. Re-torquing the bolts or replacing the bushings eliminates the movement and the noise.

48. A — New brake shoes are thicker than the worn shoes they replace, which changes the mechanical relationship between the shoes, the drum, and the parking brake cable. The parking brake cable must be readjusted to take up the slack created by the different shoe-to-drum clearance with new shoes. Without this adjustment, the cable cannot pull the shoes tightly enough against the drum to hold the vehicle on an incline.

49. B — Rapid oscillation of short-term fuel trim between positive and negative values with a long-term fuel trim near zero is the normal signature of a properly functioning closed-loop fuel control system. The PCM is making small, real-time corrections based on oxygen sensor feedback — adding a little fuel, then subtracting a little — to maintain the stoichiometric air-fuel ratio around the target. This is exactly what the system is designed to do.

50. D — R-134a operates at higher pressures and has a lower heat-transfer efficiency than R-12 in systems that were originally engineered for R-12. The condenser in an R-12 system may be undersized for R-134a's heat rejection requirements, resulting in reduced cooling performance even with correct charge levels. Upgrading to a higher-capacity condenser or adding a supplemental fan during a retrofit improves performance.

51. C — A wetted area on the driveshaft near the transmission yoke is the classic presentation of a leaking transmission rear (extension housing) seal. This seal prevents transmission fluid from escaping around the output shaft where it enters the driveshaft yoke. As the vehicle drives, the leaking fluid is

slung along the driveshaft by centrifugal force, creating the visible wet pattern. Replacing the seal and inspecting the yoke surface for wear grooves is the standard repair.

52. B — When a single bulb or light circuit is dimmer than its counterpart on the opposite side, the problem is almost always localized to that specific circuit. A poor ground connection or corroded bulb socket creates resistance that reduces current flow to that bulb, causing it to glow dimmer. Cleaning or replacing the socket and verifying a solid ground restores full brightness. System-wide causes like a failing alternator would affect both sides equally.

53. A — Oxides of nitrogen (NOx) form when combustion chamber temperatures exceed approximately 2,500°F. The EGR system's sole purpose is to dilute the incoming air-fuel charge with a metered amount of inert exhaust gas, which lowers peak combustion temperatures and reduces NOx formation. If the EGR valve is stuck closed, a passage is clogged, or the EGR solenoid has failed, no exhaust gas recirculates and combustion temperatures remain high, producing excessive NOx.

54. D — A broken or collapsed engine mount allows the engine and transmission to move excessively on its mounts during shifts, acceleration, and deceleration. This physical engine movement is transmitted through the drivetrain and into the vehicle body, producing a jolt that the driver perceives as a harsh shift. Because the transmission itself is functioning normally and produces no DTCs, the mount is easily overlooked. A visual inspection of the mounts under load (applying brake and loading drive/reverse) reveals the torn or collapsed rubber.

55. C — A starter drawing 310 amps against a 200-amp specification is consuming far more current than designed, and the excessive load explains the slow cranking speed. The cause is either excessive mechanical resistance (tight engine, hydrolocked cylinder, starter pinion binding on the ring gear) or internal starter motor failure (shorted armature windings, dragging brushes, seized bushings). The high amperage draw combined with slow cranking eliminates battery and cable issues as the primary cause.