PRACTICE EXAM 6: ASE G1 SIMULATION — 55 QUESTIONS

1. A technician is preparing to disconnect the battery on a vehicle equipped with multiple electronic modules, power seats, power windows, and a navigation system. What should the technician do BEFORE disconnecting the negative cable?

A. Remove all fuses from the underhood fuse box to prevent power spikes

B. Record or verify that the customer has all radio security codes, and note any seat, mirror, and module memory settings that will need to be restored

C. Run the engine at 2,000 RPM for 5 minutes to ensure all capacitors are fully charged

D. Disconnect the alternator B+ wire first to prevent a voltage spike when the battery is removed

2. A technician finds a green fluid leak under the front of a vehicle. The fluid is slippery, has a sweet smell, and feels oily between the fingers. Which of the following fluids is this MOST likely?

A. Windshield washer fluid

B. Power steering fluid

C. Refrigerant oil from the A/C system

D. Ethylene glycol engine coolant

3. A vehicle requires spark plug replacement. The service information specifies a torque of 18 ftlbs for the spark plugs in an aluminum cylinder head. The technician does not have a torque wrench available. Which of the following is the correct action?

A. Obtain a torque wrench before installing the plugs, because aluminum threads are easily damaged by overtorquing

B. Handtighten the plugs and then turn an additional full turn with a ratchet to approximate proper torque

C. Use antiseize compound liberally to compensate for the lack of precise torque

D. Install the plugs fingertight only and return to torque them when a torque wrench becomes available

4. A vehicle's horn sounds continuously without pressing the horn button. The horn stops when the horn relay is removed from the fuse box. Which of the following is the MOST likely cause?

A. An open circuit in the horn ground wire

B. Both horn assemblies have failed with internally stuck contacts

C. A short to ground in the horn switch circuit or a horn switch that is stuck closed

D. A faulty clockspring that has disconnected the horn wire

5. Technician A says that a wheel speed sensor air gap that is too large will cause the ABS to activate prematurely at low speeds. Technician B says that a wheel speed sensor air gap that is too large will cause the ABS warning light to illuminate due to a weak or missing sensor signal. 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

6. A technician is diagnosing a vehicle with an illuminated SRS (airbag) warning light. Which of the following precautions must be observed BEFORE working on any SRS component?

A. Remove the SRS fuse and immediately begin work on the system

B. Disconnect the battery and wait at least 30 seconds before working near airbag components

C. Wear rubbersoled shoes to prevent static discharge into the airbag squib

D. Disconnect the battery and wait the manufacturer specified time (often 2+ minutes) for the backup capacitor to discharge before servicing any SRS component

7. A customer complains that the vehicle's fuel gauge reads empty even though the tank was recently filled. All other instrument cluster gauges function correctly. Which of the following is the MOST likely cause?

A. A faulty fuel level sending unit in the fuel tank or an open circuit in its wiring

B. A failed instrument cluster voltage regulator affecting all gauge readings

C. An incorrect fuse rating for the instrument cluster circuit

D. A shorted fuel pump relay sending continuous voltage to the gauge circuit

8. A technician needs to remove a bolt that is seized due to rust and corrosion. Which of the following is the correct sequence of steps?

A. Use a longer breaker bar to apply maximum force immediately to break the bolt free

B. Heat the bolt with an open flame torch until it glows red, then use an impact wrench

C. Apply penetrating oil, allow adequate soak time, then use a properly sized sixpoint socket with controlled force

D. Drill out the bolt immediately to save time and install a HeliCoil or thread insert

9. A vehicle's turn signal flashes at double the normal rate on the left side. The right side flashes at the normal rate. Which of the following is the MOST likely cause?

A. A faulty turn signal flasher relay that is overheating

B. A burnedout bulb on the left side of the vehicle reducing circuit resistance

C. A short circuit in the multifunction switch

D. A faulty body control module sending incorrect flash rate commands

10. A technician is performing a front brake pad replacement. After compressing the caliper piston back into its bore, what must the technician verify BEFORE testdriving the vehicle?

A. That the parking brake cable has been reconnected to the front caliper

B. That the antirattle clips have been removed to allow the pads to seat properly

C. That the brake rotor minimum thickness specification is stamped on the new pads

D. That the brake pedal has been pumped several times to seat the pads against the rotors and a firm pedal has been established

11. Technician A says that the camshaft position (CMP) sensor provides the PCM with information to determine which cylinder is on its compression stroke for sequential fuel injection timing. Technician B says the crankshaft position (CKP) sensor alone provides all the information needed for sequential fuel injection. 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

12. A vehicle's A/C compressor clutch cycles on and off every 3–5 seconds during operation. The highside pressure is slightly above normal and the lowside pressure drops rapidly when the compressor engages. Which of the following is the MOST likely cause?

A. An overcharged A/C system with excessive refrigerant

B. A faulty compressor with worn internal valves that cannot maintain displacement

C. A restricted liquid line, receiver/drier, or orifice tube causing a restriction in the refrigerant flow path

D. A loose compressor clutch belt that slips under load

13. A technician is inspecting a vehicle's exhaust system and notices a small hole in the catalytic converter heat shield. There are no exhaust leaks and the converter functions properly. What is the correct action?

A. Replace the entire catalytic converter assembly since the heat shield is integral

B. Ignore the hole since it has no impact on emissions or vehicle operation

C. Weld the hole closed and paint the repaired area with hightemperature paint

D. Repair or replace the heat shield to prevent heat damage to the underbody and floor pan

14. A customer states that the vehicle's engine oil pressure gauge reads higher than normal when the engine is first started cold but drops to the normal range as it warms up. There are no unusual engine noises. Which of the following is correct?

A. The oil pump relief valve is sticking, causing dangerously high coldstart pressure

B. This is normal behavior — cold oil is thicker and produces higher pressure readings until it reaches operating temperature and thins

C. The oil pressure sending unit is faulty and must be replaced

D. The oil filter bypass valve is stuck closed, causing a pressure spike

15. A vehicle has a nocrank condition. The headlights are bright, and the battery voltage measures 12.6 volts. When the ignition key is turned to the Start position, there is no click and no cranking. The headlights do not dim. Which of the following is the MOST likely cause?

A. An open circuit in the starter control circuit — such as a faulty ignition switch, neutral safety switch, starter relay, or wiring

B. A failed starter motor with a shorted armature winding

C. An internally shorted battery that cannot deliver cranking current

D. A weak battery with high internal resistance that drops under load

16. A technician is replacing a serpentine belt on an engine with a springloaded automatic tensioner. The belt routing diagram is missing from the vehicle. What is the correct action?

A. Route the belt in any configuration that keeps all pulleys engaged

B. Install the belt with the ribbed side contacting all pulleys including the idler

C. Route the belt so the flat (back) side contacts the water pump pulley only

D. Look up the correct belt routing diagram in the service information system before installation

17. A vehicle's power steering fluid is foamy and the level fluctuates in the reservoir. The power steering pump whines during turns. Which of the following is the MOST likely cause?

A. An overfilled power steering fluid reservoir

B. An incorrect type of power steering fluid creating chemical reaction with the seals

C. Air being drawn into the system through a leaking suction hose, loose connection, or low fluid level

D. A worn power steering rack with excessive internal bypass

18. A vehicle owner asks whether premium (higher octane) fuel will improve performance or fuel economy in an engine designed for regular (87 octane) fuel. Which of the following is the correct response?

A. Premium fuel provides no performance or economy benefit in engines designed for regular octane, as the engine's compression ratio and knock sensor calibration are optimized for 87 octane

B. Premium fuel always provides better fuel economy regardless of engine design due to its higher energy content

C. Premium fuel cleans the fuel injectors more effectively than regular fuel

D. Premium fuel prevents carbon buildup in all engines and should be used at least once per month

19. A vehicle with a hydraulic clutch has a clutch pedal that slowly sinks to the floor when held in the depressed position. Releasing the pedal allows it to return to full height. Which of the following is the MOST likely cause?

A. A worn clutch disc that has insufficient friction material thickness

B. An internal seal leak in the clutch master cylinder or slave cylinder allowing fluid to bypass under sustained pressure

C. A weak clutch pedal return spring that cannot hold the pedal up

D. Air in the clutch hydraulic line causing the pedal to feel spongy

20. A technician discovers a rustthrough hole in a vehicle's structural frame rail during an inspection. The vehicle is otherwise in running condition. What is the correct action?

A. Note it in the inspection report but take no action since rust is cosmetic

B. Apply an undercoating spray to prevent further rust progression

C. Weld a reinforcement plate over the area as a permanent repair

D. Inform the customer that the frame is structurally compromised and the vehicle may be unsafe until properly repaired or evaluated by a qualified frame/body shop

21. A vehicle equipped with an automatic transmission has a transmission temperature warning light illuminated on the dashboard. The transmission shifts normally. What should the technician investigate FIRST?

A. The transmission control module for an internal logic fault

B. The torque converter for excessive slippage generating heat

C. The transmission fluid level and condition, external cooler lines, and cooler for restriction or leaks

D. The engine cooling system since the transmission cooler is integrated into the radiator

22. Technician A says that a vehicle's tire should be replaced if the tread depth reaches 2/32nds of an inch at any point across the tread. Technician B says that a tire with 4/32nds of tread is still legal but should be monitored closely, especially for wet weather traction. 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

23. A technician is testing a wiring circuit and finds 12.4 volts at the component's power input terminal but 0 volts at the component's ground terminal (measured from the terminal to battery positive). The component does not operate. Which of the following is the MOST likely cause?

A. An open in the power supply wire upstream of the component

B. An open in the ground circuit between the component and the body/frame ground point

C. The component has an internal short circuit drawing excessive current

D. The fuse for the circuit has blown due to a downstream short to power

24. A vehicle's engine produces a loud knocking noise from the lower end that increases in intensity with RPM. The oil level is correct and the oil pressure is within specification at idle. Which of the following is the MOST likely cause?

A. A stuck hydraulic valve lifter on the upper end of the engine

B. Excessive valve lash on a mechanical lifter engine

C. A loose flywheel or flexplate bolt

D. A worn connecting rod bearing that has excessive clearance

25. A vehicle with stability control (ESC) has the ESC warning light illuminated. A scan tool shows a DTC for the steering angle sensor. The sensor requires calibration. When is steering angle sensor calibration typically required?

A. Only after the vehicle has been driven 500 miles to allow the sensor to selflearn

B. Only when the ESC module has been replaced

C. After any wheel alignment, steering component replacement, or battery disconnection that may have reset the sensor's centerpoint reference

D. Calibration is never required because the steering angle sensor is selfcalibrating on all modern vehicles

26. A technician needs to drain the coolant from a vehicle to replace the water pump. Which of the following is the MOST environmentally responsible procedure?

A. Drain the coolant into an approved catch container for recycling or proper disposal, and never pour coolant into floor drains, storm drains, or onto the ground

B. Drain the coolant directly into the floor drain since ethylene glycol is biodegradable

C. Allow the coolant to drain onto the shop floor and mop it up afterward

D. Drain the coolant into an open pan and leave it to evaporate overnight

27. A vehicle's A/C system blows cold air from the driver's side vents but warm air from the passenger's side vents. Both sides have independent temperature controls. Which of the following is the MOST likely cause?

A. A low refrigerant charge affecting only one side of the evaporator

B. A clogged cabin air filter directing airflow to one side of the HVAC case

C. A faulty A/C compressor clutch that engages intermittently

D. A failed blend door actuator on the passenger side of the dualzone climate control system

28. Technician A says that a scan tool freeze frame data capture shows the engine operating conditions at the moment a DTC was set. Technician B says that freeze frame data is only useful for intermittent codes and has no diagnostic value for current faults. Who is correct?

A. Technician A only

B. Technician A is correct because freeze frame captures the snapshot at fault time; Technician B is wrong because freeze frame data is valuable for ALL codes — it shows the exact conditions under which the fault occurred

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

29. A customer reports that their vehicle's automatic headlights do not turn on when entering a parking garage or tunnel. The headlights work normally in all manual switch positions. Which of the following is the MOST likely cause?

A. A faulty headlight relay that does not respond to the automatic control signal

B. A defective body control module that cannot process the light sensor signal

C. A malfunctioning ambient light sensor (typically mounted on the dashboard) that cannot detect the change from light to dark conditions

D. A burnedout daytime running light module interfering with the automatic headlight circuit

30. A technician is removing the intake manifold on a V6 engine and discovers that one of the manifold bolts has stripped threads in the aluminum cylinder head. Which of the following is the correct repair?

A. Install a thread repair insert (such as a HeliCoil or TimeSert) to restore the original thread size and integrity in the aluminum head

B. Use a larger bolt with a selftapping tip to create new threads in the aluminum

C. Apply threadlocking compound to the stripped bolt and reinstall it at reduced torque

D. Leave that bolt out and rely on the remaining bolts to seal the manifold gasket

31. A vehicle's backup lights do not illuminate when the transmission is placed in Reverse. All other exterior lights work normally. The backup light fuse is good. Which of the following is the MOST likely cause?

A. A faulty body control module that cannot command the backup light relay

B. Both backup light bulbs burned out simultaneously

C. A misadjusted headlight switch affecting the backup light circuit

D. A faulty reverse light switch (range sensor or backup switch) on the transmission or its wiring

32. A vehicle is equipped with a tire pressure monitoring system that uses valvestemmounted sensors. The customer has purchased a set of new aftermarket wheels without TPMS sensor provisions. What must the technician inform the customer?

A. The TPMS sensors can be eliminated without consequence by simply clearing the TPMS DTC

B. The TPMS sensors must be transferred to the new wheels or new sensors purchased and programmed, or the TPMS warning light will remain on and the vehicle may fail state inspection

C. Aftermarket wheels automatically disable the TPMS system through a resistor bypass

D. The TPMS light can be permanently disabled by removing the TPMS fuse

33. A vehicle's engine stalls when the A/C compressor clutch engages at idle. The engine runs normally with the A/C off. Which of the following is the MOST likely cause?

A. A faulty A/C pressure transducer sending an incorrect signal to the PCM

B. A refrigerant overcharge creating excessive compressor head pressure

C. The PCM is not commanding a compensating idle speed increase when the A/C compressor engages, or the idle air control system cannot deliver the additional air

D. The compressor clutch gap is too large, causing the clutch to slip and overload the engine

34. A vehicle's tire has the following markings on the sidewall: P225/55R17 97V. What does the "55" represent?

A. The aspect ratio — meaning the sidewall height is 55% of the tire's section width (225 mm)

B. The load index rating in kilograms

C. The tire's speed rating in miles per hour at maximum inflation

D. The UTQG treadwear grade

35. A technician is performing a state safety inspection and finds that the passengerside windshield wiper does not clear the glass effectively — it streaks heavily and leaves large areas unwiped. The wiper arm tension is adequate. What is the correct action?

A. Pass the inspection and recommend wiper blade replacement at the customer's convenience

B. Apply a glass treatment compound to improve water beading and pass the inspection

C. Adjust the wiper arm position on the wiper pivot shaft to improve the wipe pattern

D. Fail the inspection; the wiper blade must be replaced before the vehicle can pass because adequate driver visibility is a safety requirement

36. A vehicle with a pushbutton start system will not start. The dashboard displays a message: "Key Fob Battery Low." The driver has verified the fob is present in the vehicle. Which of the following is the correct procedure to start the engine?

A. Replace the battery in the key fob before attempting to start the vehicle

B. Hold the key fob directly against the start button or a designated spot on the steering column to allow the shortrange backup transponder to be read, then press the start button

C. Connect a jump box to the vehicle's battery to boost the key fob signal

D. Call a tow truck, as the vehicle cannot be started with a dead key fob battery

37. A vehicle's front brake rotors are being measured for parallelism (thickness variation). The micrometer readings taken at six equally spaced points around the rotor show a maximum variation of 0.0008 inches. The specification allows 0.0005 inches maximum variation. What is the correct action?

A. The rotor is within specification and can be returned to service

B. Apply a rotor surface treatment to restore uniform thickness

C. Machine the rotor to restore parallelism if sufficient thickness remains, or replace it if machining would bring it below the discard specification

D. Replace the brake pads only, as they will naturally wear the rotor to a uniform thickness

38. A technician is testing the charging system and measures 15.8 volts at the battery with the engine running at 2,000 RPM. The specification is 13.5–14.8 volts. What does this indicate?

A. The voltage regulator is failing and overcharging the battery, which can cause battery damage, boiled electrolyte, and premature failure of electrical components

B. This is a normal reading for an engine running at elevated RPM

C. The battery is fully charged and pushing back excess voltage to the alternator

D. The DMM requires calibration because this reading is not possible from a standard automotive alternator

39. A technician notices that one front tire on a vehicle shows feathered wear — the tread blocks are smooth on one edge and sharp on the other across the entire tire. Which alignment angle is MOST likely out of specification?

A. Excessive positive camber

B. Incorrect toe setting (excessive toein or toeout)

C. Insufficient caster

D. Excessive steering axis inclination

40. A vehicle's exhaust system produces a loud ticking noise that is synchronous with engine RPM when the engine is first started cold, but the noise fades as the engine warms up. There is a slight exhaust odor in the engine compartment. Which of the following is the MOST likely cause?

A. A cracked catalytic converter substrate that expands and seals with heat

B. A leaking exhaust manifold gasket that allows exhaust to escape when cold

C. A worn exhaust camshaft lobe that reduces valve lift when cold

D. An exhaust leak at the manifoldtohead connection that seals as the manifold expands with heat — the same result as a leaking manifold gasket

41. A customer asks what causes a "check engine light" to turn on. Which of the following is the MOST complete and accurate explanation?

A. The check engine light indicates that the vehicle needs an oil change or routine maintenance

B. The check engine light means the engine is about to fail and the vehicle should not be driven

C. The check engine light (MIL) illuminates when the OBD II system detects an emissionsrelated fault and stores a diagnostic trouble code; it does not necessarily indicate an emergency but should be diagnosed promptly

D. The check engine light is triggered by low fuel level to remind the driver to refuel

42. Technician A says that when replacing a wheel bearing on a unitized (sealed) hub assembly, the bearing preload is set automatically by torquing the axle nut or hub bolts to specification. Technician B says that all wheel bearings require manual preload adjustment with a dial indicator after installation. 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

43. A vehicle has a clicking noise from the instrument panel area when the ignition is turned to the ON position, followed by the blower motor not operating on any speed. The clicking repeats several times and then stops. Which of the following is the MOST likely cause?

A. A faulty ignition switch not providing sufficient voltage to the HVAC system

B. A seized blower motor that is causing the blower motor relay to rapidly cycle on thermal protection

C. A clogged cabin air filter restricting airflow and stalling the blower motor

D. A faulty blower motor relay that is chattering due to insufficient control circuit voltage, a highresistance connection, or a failed blower motor drawing lockedrotor current

44. A technician is replacing a fuel pump assembly on a vehicle with an intank electric fuel pump. Which safety precaution is MOST critical during this procedure?

A. Wearing hearing protection due to the noise level of removing the fuel tank

B. Ensuring the work area is wellventilated, free of ignition sources, and that a fire extinguisher rated for flammable liquids is immediately accessible

C. Wearing a full hazmat suit rated for gasoline exposure

D. Disconnecting only the positive battery cable to prevent sparks

45. A vehicle's electronically controlled automatic transmission shifts normally through all gears during city driving but will not shift into overdrive on the highway. The overdrive switch (if equipped) is in the ON position. There are no DTCs. Which of the following is the MOST likely cause?

A. A worn overdrive band or clutch pack that slips under load

B. A faulty governor valve (on hydraulically controlled transmissions)

C. The engine has not reached full operating temperature — many PCMs inhibit overdrive engagement until the engine is fully warmed to prevent lugging and promote catalytic converter warmup

D. A clogged transmission filter restricting flow only at the highest line pressure

46. A technician is installing a replacement battery in a vehicle. The old battery is a Group 24 with 600 CCA. The replacement battery available is a Group 24F with 650 CCA. Which of the following is a potential concern?

A. The Group 24F battery has reversed terminal positions compared to Group 24, which may cause the cables to not reach correctly or be connected to the wrong polarity

B. The 650 CCA rating will overload the vehicle's electrical system and damage the starter motor

C. The "F" designation means the battery is a floodfree design and is incompatible with standard charging systems

D. Group 24F batteries are taller and may not fit under the battery holddown clamp

47. A vehicle's scan tool data shows that the upstream O2 sensor on Bank 1 switches from rich to lean 6 times in 10 seconds, while the downstream O2 sensor on Bank 1 shows a nearly flat line at approximately 0.7 volts. What does the downstream sensor reading indicate?

A. The downstream sensor has failed and needs replacement

B. The catalytic converter is functioning efficiently — the converter is smoothing out the exhaust gas fluctuations and storing oxygen properly

C. The downstream sensor is reading lean and the catalytic converter is not working

D. The PCM is in openloop mode and is not using the downstream sensor data

48. A vehicle's power window goes down normally but will not go up. The technician reverses the motor connector polarity and the motor runs in both directions. Which of the following is the MOST likely cause?

A. A failed window regulator gear that binds in one direction of travel

B. A seized window motor that cannot generate enough torque for the upward direction

C. A faulty window motor with a burned directional winding

D. A faulty power window switch that does not send power to the motor in the up direction

49. A customer asks the technician why the steering wheel is offcenter after having the front tires replaced. The vehicle tracks straight and does not pull. Which of the following is the MOST likely explanation?

A. The new tires have different tread patterns causing the vehicle to steer differently

B. The front strut upper mounts shifted when the vehicle was lifted for tire installation

C. The tie rods were disturbed during tire service or the alignment toe was already slightly off before tire installation, making the offcenter condition more noticeable with new tires

D. The steering column universal joint is worn and allows the wheel to settle offcenter

50. A technician is replacing a thermostat that has been diagnosed as stuck closed. During reassembly, which of the following is MOST important to verify?

A. That the thermostat is installed with the sensing element (spring side) facing into the engine block toward the hot coolant

B. That the thermostat's wax element has been pretested in boiling water before installation

C. That the replacement thermostat has been removed from its packaging at least 24 hours before installation to reach room temperature

D. That a thin layer of RTV is applied to the thermostat pellet to ensure a tight seal in its seat

51. A technician is diagnosing a vibration complaint on a rearwheeldrive vehicle. The vibration is present at 60 mph in all gears and in Neutral. Lifting the rear of the vehicle and running it in gear at the equivalent of 60 mph reveals the vibration is still present. Which of the following components is the MOST likely source?

A. The rear tires, which are eliminated since they are off the ground

B. The driveshaft, which is still spinning during the onlift test and is the most likely remaining source

C. The transmission output shaft bearing

D. The rear differential ring gear

52. A vehicle's air conditioning system has a musty odor that occurs only when the A/C is first turned on and disappears after a few minutes. The cabin air filter was replaced recently. Which of the following is the MOST appropriate corrective action?

A. Replace the evaporator core since the odor indicates an internal refrigerant leak

B. Flush the heater core to remove debris causing the odor

C. Replace the cabin air filter again with a charcoalactivated filter

D. Treat the evaporator core surface with an approved antimicrobial spray to kill mold and mildew growth, and ensure the HVAC condensate drain is clear

53. A technician is measuring the cold cranking amps (CCA) of a battery using a conductance tester. The battery is rated at 700 CCA. The tester indicates 425 CCA measured. What is the correct interpretation?

A. The battery has failed the conductance test but should be recharged and retested before condemning it

B. The battery has marginal capacity and may function in warm weather but should be monitored

C. The battery's measured capacity is significantly below its rated capacity, indicating it should be replaced — especially before cold weather when CCA demand is highest

D. The conductance reading is within the normal range for a battery that is 2+ years old

54. A customer reports a vibration in the steering wheel when braking from highway speed that was not present two weeks ago. The vehicle recently had its wheels rotated. Which of the following should the technician check FIRST?

A. The wheel lug nut torque on all wheels, since improper torque during the recent rotation can cause rotor lateral runout from an unevenly seated rotor

B. The brake pad material for the correct friction coefficient

C. The front wheel bearings for excessive play

D. The power steering pump for pulsation under load

55. A vehicle's starter motor engages the flywheel and cranks the engine but produces a loud grinding noise. After the engine starts, the noise stops. Which of the following is the MOST likely cause?

A. A cracked flywheel ring gear that flexes under starter engagement load

B. Worn or damaged teeth on the starter drive gear (Bendix) or the flywheel ring gear preventing smooth mesh engagement

C. A seized starter solenoid plunger that is slow to retract the drive gear after the engine starts

D. A faulty starter motor overrunning clutch that does not disengage after the engine fires

Practice Exam 6: Answer Key and Full Explanations

1. B — Disconnecting the battery erases volatile memory stored in electronic modules, including radio presets, security codes, seat position memory, clock settings, and learned idle/fuel trim values. Recording these settings and verifying the customer has any required security codes BEFORE disconnection prevents a frustrating post-repair experience where the radio is locked, seats are mispositioned, and the customer thinks additional damage was done. Many shops use a memory saver tool during battery service, but documenting settings is the professional standard.

2. D — Green color, sweet smell, slippery feel, and oily texture are the defining characteristics of ethylene glycol engine coolant. Windshield washer fluid is typically blue and has an alcohol smell. Power steering fluid is usually amber/reddish and has a petroleum odor. Refrigerant oil is clear to light yellow and would not normally puddle in a visible quantity. Identifying fluids by color, smell, and feel is a fundamental shop skill tested on the ASE exam.

3. A — Aluminum cylinder head threads are significantly softer than steel and are extremely susceptible to being stripped or cross-threaded by over-torquing. A torque wrench is not optional — it is required to prevent thread damage that can result in a costly repair. The technician must obtain the correct tool before proceeding; no approximation method provides the precision needed to protect aluminum threads.

4. C — Most horn circuits use a normally open ground-side switch (the horn button) to complete the relay control circuit. If the horn switch or its wiring develops a short to ground, the relay sees a constant ground signal and energizes continuously, sounding the horn. Removing the relay breaks the circuit and stops the horn, confirming the relay circuit is where the fault is being triggered. An open circuit (option A) or disconnected clockspring (option D) would prevent the horn from working, not cause it to sound continuously.

5. B — Technician B is correct. When the air gap between a wheel speed sensor and its tone ring is too large, the magnetic signal generated by the passing teeth is too weak for the ABS module to read reliably. The module interprets this as a sensor fault and illuminates the ABS warning light. Technician A's claim about premature ABS activation is incorrect — a weak signal would more likely cause loss of ABS function (the module disables the system), not premature activation.

6. D — SRS systems contain a backup energy reserve capacitor that stores enough charge to deploy airbags even after the battery is disconnected. Simply disconnecting the battery and immediately working on SRS components risks accidental deployment from this stored energy. The manufacturer-specified wait time — typically 2 to 10 minutes depending on the vehicle — allows the capacitor to fully discharge before any SRS component is handled. Accidental airbag deployment can cause serious injury or death.

7. A — Since all other gauges function correctly, the instrument cluster, its voltage supply, and its ground are working properly. The fault is isolated to the fuel gauge circuit. The fuel level sending unit is a variable resistor (rheostat) inside the fuel tank that changes resistance as the float arm moves with fuel level. If the sending unit fails open or its wiring breaks, the gauge receives no signal and reads empty regardless of actual fuel level. Testing resistance at the sending unit connector with the tank at a known level confirms the diagnosis.

8. C — The correct approach to a seized bolt is graduated force, not brute force. Penetrating oil breaks down the corrosion bond between the bolt threads and the mating material; soak time allows it to wick into the thread interface. A six-point socket (not twelve-point) maximizes contact area on the bolt head to prevent rounding. Controlled force — rather than immediately using the longest breaker bar available — reduces the risk of snapping the bolt, which creates a far more expensive repair than the patience required to do it correctly.

9. B — Turn signal flasher rate is determined by the total circuit resistance (or current draw). When a bulb burns out on one side, the circuit's resistance increases (or current decreases), and the flasher responds by flashing at double speed. This hyper-flash is actually a designed feature — it alerts the

driver that a bulb has failed. The normal-rate flash on the right side confirms the flasher unit itself is functioning correctly, isolating the problem to a failed bulb on the left side.

10. D — After compressing the caliper piston to install new pads, a gap exists between the pads and the rotor. If the technician does not pump the brake pedal to push the pistons back out to contact the pads, the first pedal application in traffic will go to the floor with no braking force. This is one of the most critical safety steps after any brake pad replacement and is the number one cause of post-repair brake failure complaints. The pedal must be firm and high before the vehicle moves.

11. A — Technician A is correct. The crankshaft position sensor tells the PCM where the crankshaft is in its rotation and at what speed it turns, but it cannot distinguish between the compression stroke and the exhaust stroke (which are 360° apart). The camshaft position sensor provides the additional cylinder-identification signal needed for the PCM to determine which cylinder is on its compression stroke, enabling sequential fuel injection — firing each injector individually just before its intake valve opens.

12. C — Rapid compressor cycling with a high-side that is slightly elevated and a low-side that plunges when the compressor engages indicates a restriction in the refrigerant flow path between the high side and the low side. The most common restriction points are the orifice tube (clogged with debris or wax), the receiver/drier (saturated or internally blocked), or a kinked liquid line. The restriction starves the evaporator, the low-side pressure drops rapidly, the low-pressure switch cuts the compressor, pressure equalizes, and the cycle repeats.

13. D — The catalytic converter heat shield is a separate component whose purpose is to protect the vehicle's underbody, floor pan, and any materials near the converter from the extreme heat the converter generates (which can exceed 1,600°F). A hole in the heat shield allows radiated heat to reach heat-sensitive areas, creating a potential fire hazard — especially when parked over dry grass or debris. The shield should be repaired or replaced even if the converter itself functions correctly.

14. B — This is completely normal engine behavior. Cold engine oil has higher viscosity (it is thicker), which creates more resistance to flow through the oil pump and galleries, producing higher oil pressure readings on the gauge. As the engine reaches operating temperature, the oil thins, flows more easily, and the pressure drops to the normal warm operating range. This predictable pattern actually confirms the oil pressure system is functioning correctly.

15. A — Bright headlights and a 12.6V battery confirm the battery is fully charged and capable of delivering current. The fact that nothing happens when the key is turned — no click, no crank, and the headlights don't dim — means no high-current path is being established to the starter. The problem is in the low-current starter control circuit: the ignition switch, the neutral safety switch (or clutch pedal

switch), the starter relay, or the wiring connecting them. If the starter itself were shorted, the headlights would dim dramatically when the key was turned.

16. D — Serpentine belt routing is specific to each engine configuration and determines which pulleys contact the ribbed side versus the smooth (back) side of the belt. Incorrect routing can result in components spinning backward (such as the water pump), no drive to a critical accessory, or immediate belt derailment. The technician must consult the service information for the correct routing diagram before installation — this is not something to guess at or approximate.

17. C — Foamy power steering fluid with a fluctuating level and a whining pump are the classic symptoms of air entrainment in the hydraulic circuit. Air enters the system through a cracked or loose suction hose, a loose hose clamp, a worn pump shaft seal, or when the fluid level drops low enough to expose the pump inlet. The air mixes with the fluid, creates foam, and the pump cavitates because it is compressing a mixture of fluid and air rather than solid fluid. Bleeding the system and repairing the air entry point resolves all three symptoms.

18. A — In an engine designed for 87 octane regular fuel, the compression ratio and knock sensor calibration are optimized for that octane level. Premium fuel's higher octane rating resists detonation at higher compression ratios, but in an engine that doesn't need that resistance, the additional octane provides no performance gain, no fuel economy improvement, and no cleaning benefit. Premium fuel is a higher-cost product that offers zero advantage in a regular-octane engine.

19. B — A clutch pedal that holds firm initially but slowly sinks under sustained pressure — and returns to full height when released — is the hallmark of an internal hydraulic seal bypass. The master cylinder or slave cylinder piston seals allow fluid to leak past internally under sustained pressure, causing the pedal to gradually drop. When the pedal is released, the spring returns it to full height because no pressure is being applied. This is identical in principle to a brake master cylinder with an internal leak.

20. D — A rust-through hole in a structural frame rail is not cosmetic — it is a safety defect that compromises the vehicle's crash protection, load-bearing capacity, and structural rigidity. The technician's responsibility is to clearly inform the customer of the safety risk and recommend evaluation or repair by a qualified frame or body shop. Undercoating over a rusted-through area does not restore structural integrity and could be considered concealing a known safety defect.

21. C — Transmission temperature concerns should begin with the simplest and most accessible checks: fluid level, fluid condition (burned fluid generates heat), and the external cooling circuit. A low fluid level causes the pump to cavitate, generating heat. A restricted or leaking cooler line reduces the system's ability to reject heat. A clogged cooler core (especially if integrated into the radiator) eliminates

the primary heat rejection path. These external checks must be performed before suspecting internal transmission faults.

22. A — Both technicians are correct. Technician A states the legal and safety minimum: 2/32nds of an inch is the point at which a tire is legally worn out in most jurisdictions and must be replaced. Technician B adds practical context: at 4/32nds, the tire is legal but has significantly reduced wet traction because the shallower grooves cannot channel water effectively, increasing hydroplaning risk. Both statements are factually accurate and complementary.

23. B — This is a pure circuit theory question. The component has 12.4V on its power input — confirming the power supply side is intact. But measuring 0V from the ground terminal to battery positive means there is no voltage drop across the component, which means no current is flowing. For current to flow, it needs a complete path from power through the component to ground. If the ground wire is open (broken or disconnected), the circuit is incomplete and the component cannot operate despite having power available at its input.

24. D — A loud knocking noise from the lower end of the engine that increases proportionally with RPM — with correct oil level and adequate oil pressure at idle — is the classic presentation of a worn connecting rod bearing. The bearing clearance has increased to the point where the connecting rod impacts the crankshaft journal with each revolution, producing a deep, rhythmic knock. Oil pressure may still read normal at idle because the oil pump can compensate at low speed, but the bearing is past its service life and catastrophic failure is imminent.

25. C — The steering angle sensor establishes a center-point reference that the stability control system uses to compare the direction the driver is commanding (steering wheel position) with the direction the vehicle is actually traveling (yaw rate and wheel speed data). Any service that changes the steering geometry — alignment, tie rod replacement, steering gear replacement — or that resets module memory (battery disconnection) can shift or erase this center reference. Recalibration re-establishes the zero-point so the ESC system operates with accurate steering input data.

26. A — Ethylene glycol coolant is toxic to humans and animals (it has a sweet taste that attracts pets) and is classified as a hazardous waste in most jurisdictions. It must be drained into an approved catch container and either recycled through an approved coolant recycling machine or disposed of through a licensed waste hauler. Pouring coolant into floor drains, storm drains, or onto the ground is an environmental violation that can contaminate groundwater and result in significant fines under EPA and local regulations.

27. D — A dual-zone climate control system uses independent blend door actuators for the driver and passenger sides to allow different temperature settings. If the passenger-side blend door actuator fails, sticks, or loses its calibration, it cannot direct heated or cooled air properly for that zone. The A/C system, refrigerant charge, and airflow are all functioning — the problem is purely in the mechanical air distribution on one side. Replacing or recalibrating the failed actuator restores independent temperature control.

28. B — Technician A is correct: OBD II freeze frame data captures a snapshot of critical engine parameters (RPM, load, coolant temperature, fuel trim, vehicle speed, etc.) at the exact moment a DTC is stored. Technician B is incorrect: freeze frame data is valuable for ALL DTCs, not just intermittent ones. For current faults, it shows the operating conditions that triggered the code, helping the technician understand WHEN and WHY the fault occurs — which directly guides the diagnostic path.

29. C — The automatic headlight system relies on an ambient light sensor (photocell), typically located on the top of the dashboard or near the base of the windshield, to detect changes in exterior light levels. If the sensor fails, is blocked by an object, or has a faulty connection, it cannot detect the transition from daylight to darkness when entering a tunnel or parking garage. Since the manual headlight positions work normally, the headlight circuit itself is functional — the fault is in the automatic control input.

30. A — A thread repair insert (HeliCoil, Time-Sert, or similar) is the industry-standard repair for stripped threads in aluminum. The insert restores the original thread size and pitch using a hardened steel coil or insert that provides stronger threads than the original aluminum. Using a larger, self-tapping bolt weakens the surrounding material; thread locker on a stripped bolt provides no clamping force; and omitting a bolt compromises gasket sealing and creates a vacuum or coolant leak path.

31. D — The reverse light switch (or the neutral safety/range sensor that includes the reverse circuit) is mounted on the transmission and signals the lighting circuit when reverse gear is selected. If this switch fails or its wiring is damaged, no signal reaches the backup lights. Since all other exterior lights work normally, the general lighting fuse, ground, and body control module are functioning. The fault is isolated to the reverse-specific switch or its dedicated wiring — the only components unique to the backup light circuit.

32. B — TPMS is a federally mandated safety system (TREAD Act), and disabling it is not a legal option. If the new aftermarket wheels do not have TPMS sensor provisions, the sensors from the original wheels must be transferred and mounted in the new wheels, or new compatible sensors must be purchased and programmed to the vehicle. Without functioning sensors, the TPMS warning light remains illuminated, the system cannot monitor tire pressures, and the vehicle will fail state inspections in jurisdictions that check for TPMS functionality.

33. C — When the A/C compressor engages, it places a significant parasitic load on the engine (typically 5–10 horsepower). The PCM is programmed to compensate for this load by commanding a slight increase in idle speed through the idle air control valve, electronic throttle body, or by adjusting ignition timing. If the PCM fails to command this compensation — or the idle air control system cannot deliver the additional airflow — the engine cannot carry the added load and stalls.

34. A — In the tire size designation P225/55R17, the "55" is the aspect ratio, which expresses the sidewall height as a percentage of the tire's section width. In this case, the sidewall height is 55% of 225 mm, which equals 123.75 mm. A lower aspect ratio number indicates a shorter sidewall (lower profile), while a higher number indicates a taller sidewall. This directly affects ride quality, handling characteristics, and the tire's overall diameter.

35. D — Windshield wipers that fail to adequately clear the glass impair driver visibility, which is a direct safety concern — particularly during rain, snow, or spray from other vehicles. Most state safety inspection programs require that wipers clear the windshield effectively across their sweep area. A wiper blade that streaks heavily and leaves large uncleared areas does not meet this standard and constitutes a failure that must be corrected before the vehicle can pass.

36. B — Push-button start vehicles use a radio-frequency signal from the key fob to communicate with the vehicle's receiver. When the fob battery dies, the RF signal is too weak to reach the receiver from a distance. However, most fobs contain a passive transponder chip that can be read at very close range without battery power. Holding the fob directly against the start button or a designated backup reader location allows this short-range passive transponder to authenticate, enabling the engine to start normally.

37. C — The rotor's thickness variation of 0.0008 inches exceeds the manufacturer's specification of 0.0005 inches maximum. This parallelism issue is what causes brake pedal pulsation — the uneven rotor surface pushes the pads in and out as it rotates. If the rotor has sufficient thickness remaining above the discard specification, it can be machined to restore parallelism. If machining would bring the rotor below the minimum thickness, it must be replaced. The rotor cannot be returned to service as-is.

38. A — A charging system producing 15.8 volts exceeds the maximum specification of 14.8 volts, indicating the voltage regulator is no longer properly limiting alternator output. Overcharging causes the battery electrolyte to boil (producing hydrogen gas and the smell of sulfur), accelerates grid corrosion inside the battery, shortens bulb life, and can damage sensitive electronic modules. The alternator must be replaced or the voltage regulator repaired immediately to prevent cascading electrical system damage.

39. B — Feathered tire wear — where each tread block is smooth on one edge and sharp on the opposite edge, felt by running your hand across the tread — is the signature wear pattern of incorrect toe alignment. Excessive toe-in wears the outer edge of each block smooth; excessive toe-out wears the inner edge smooth. This feathering occurs because the tires are being dragged slightly sideways as the vehicle drives straight, scrubbing material off one side of each tread element.

40. D — An exhaust manifold is bolted directly to the cylinder head, and both components are made of metals that expand at different rates when heated. When cold, the manifold-to-head interface may have a slight gap caused by warpage, a deteriorated gasket, or loose bolts. Exhaust gas escapes through this gap, producing a ticking noise synchronized with the firing order. As the manifold heats and expands, the gap closes, the leak seals, and the ticking disappears. This is an extremely common complaint on high-mileage vehicles.

41. C — The check engine light — technically called the Malfunction Indicator Lamp (MIL) — is part of the OBD II emissions monitoring system. It illuminates when the PCM detects a fault in an emissions-related system or component and stores a corresponding DTC. A steady MIL indicates a fault that should be diagnosed and repaired at the customer's earliest convenience. It does NOT indicate the engine is about to fail, it is NOT an oil change reminder, and it is NOT triggered by low fuel.

42. A — Technician A is correct. Modern unitized (sealed) hub bearing assemblies are pre-loaded and pre-greased at the factory. The bearing preload is established by the axle nut torque or hub bolt torque, which seats the bearing races and inner components at the correct compression. No manual adjustment with a dial indicator is required or possible. Technician B's statement applies to older serviceable tapered roller bearings, not modern sealed units.

43. D — A rapid clicking or chattering sound from a relay followed by the blower motor not operating indicates the relay is attempting to energize but cannot sustain contact. This happens when the control circuit voltage is insufficient to hold the relay coil engaged (high-resistance connection or low voltage at the coil), or when the blower motor has seized or developed a short that draws locked-rotor current, causing the relay to trip on thermal overload and attempt to reset repeatedly. Testing the relay coil voltage and the blower motor current draw isolates which component is at fault.

44. B — Working on or near an open fuel tank exposes the technician to gasoline vapor, which is extremely flammable and explosive at concentrations as low as 1.4% in air. The work area must have adequate ventilation to prevent vapor accumulation, all potential ignition sources (open flames, sparks, running engines, lit cigarettes) must be eliminated, and a Class B fire extinguisher must be within immediate reach. Fuel system service is one of the highest fire-risk procedures in an automotive shop.

45. C — Many engine and transmission control strategies intentionally inhibit overdrive engagement until the engine coolant temperature reaches a predetermined threshold — typically 150–180°F. This strategy prevents the engine from lugging in a high gear at low RPM before it is fully warmed up, which improves catalyst warm-up time and reduces emissions. If the vehicle is driven on the highway before reaching full operating temperature (such as during cold weather or a short warm-up), the transmission will shift through 1st, 2nd, and 3rd normally but will not engage overdrive until the temperature condition is met.

46. A — Battery group numbers define the physical dimensions and terminal positions for each battery size. Group 24 and Group 24F have the same physical dimensions, but the "F" designation means the positive and negative terminals are REVERSED (front-to-back position). Installing a Group 24F in a vehicle that requires Group 24 may result in the cables being too short to reach the correct terminals, or worse, connecting the battery in reverse polarity — which can destroy the vehicle's electronic modules, alternator diodes, and other sensitive components.

47. B — The upstream O2 sensor switching 6 times in 10 seconds confirms normal closed-loop fuel control — the PCM is actively adjusting the air-fuel ratio, producing rich-lean oscillation in the exhaust. The downstream sensor reading a nearly flat 0.7V (slightly rich bias) indicates the catalytic converter is effectively storing and releasing oxygen to smooth out the exhaust gas fluctuations. A failing converter would show the downstream sensor mimicking the upstream sensor's switching pattern, because the converter is no longer buffering the oxygen content.

48. D — The technician's test proved the motor runs in both directions when polarity is reversed at the connector, confirming the motor itself is functional. Since the motor works physically but does not receive power in the "up" direction during normal operation, the fault is in the component that controls polarity switching — the power window switch. The switch contains internal contacts that route current in one direction for "down" and reverse it for "up." If the "up" contacts are burned, corroded, or broken, no power reaches the motor in that direction.

49. C — A steering wheel that is off-center while the vehicle tracks straight and does not pull indicates the front wheels are pointed straight ahead but the steering wheel is clocked incorrectly relative to the wheels. This is a toe adjustment issue — either the tie rods were slightly disturbed during the tire service, or the existing alignment had a slight toe error that was masked by the old tires and became noticeable with the new tires' sharper tread edges. A toe adjustment centering the steering wheel while maintaining equal toe values on both sides corrects the condition.

50. A — The thermostat must be installed with its temperature-sensing element (the wax pellet and spring) facing INTO the engine — toward the source of hot coolant. This orientation ensures the sensing

element is exposed to the engine's actual coolant temperature and opens at the correct temperature to allow hot coolant to flow to the radiator. Installing it backward positions the sensing element toward the cooler radiator coolant, which delays opening and causes overheating.

51. B — This is a classic on-lift isolation test. With the rear wheels off the ground, the tires and rear wheel bearings are eliminated as vibration sources because they are unloaded. The engine is also unlikely since the vibration occurs at a specific vehicle speed, not engine RPM. The driveshaft, however, is still spinning at the equivalent of 60 mph during the test and remains the most likely source. A driveshaft with a worn U-joint, missing balance weight, or slight bend produces a speed-dependent vibration that persists on the lift because the shaft is still rotating.

52. D — A musty odor that occurs when the A/C first starts and fades after a few minutes is caused by mold and mildew growing on the damp evaporator core surface. When the blower first pushes air across the contaminated evaporator, it carries the musty spores into the cabin. After a few minutes of operation, the evaporator dries slightly and the odor diminishes. The correct treatment is an antimicrobial spray applied directly to the evaporator core surface (through the blower resistor port or drain opening), combined with verifying the condensate drain tube is clear so moisture does not pool in the HVAC case.

53. C — A battery rated at 700 CCA that measures only 425 CCA has lost approximately 39% of its original cranking capacity. This level of degradation means the battery may start the vehicle in warm weather (when the engine requires less cranking effort and the battery's chemical reactions are more efficient) but will likely fail in cold weather when the engine demands maximum cranking current and the battery's capacity is further reduced by low temperatures. Replacement is the correct recommendation, especially before winter.

54. A — A vibration in the steering wheel during braking that appeared shortly after a wheel rotation points directly to incorrect lug nut torque. If the lug nuts were over-torqued (especially with an impact gun without a torque-limiting stick), the rotor can be warped against the hub surface unevenly, inducing lateral runout. If under-torqued, the rotor can shift slightly on the hub, also creating runout. Checking lug nut torque is a 2-minute verification that should always be the first step when a brake vibration appears immediately after wheel service.

55. B — A grinding noise during starter engagement that stops once the engine runs indicates the starter drive gear (Bendix) and the flywheel ring gear teeth are not meshing cleanly. Worn, chipped, or damaged teeth on either component prevent smooth engagement, causing the gears to grind as the starter motor forces them together. Over time, this worsens as each engagement damages the teeth further. Inspecting both the starter drive gear and the flywheel ring gear identifies which component (or both) requires replacement.