PRACTICE EXAM 20: ASE A6 SIMULATION (50 QUESTIONS)

1. A technician is diagnosing a circuit with a voltage drop reading of 1.5 volts across a 4-foot wire during a 10-ampere load test. The wire is 16 AWG. The MOST likely cause is:

A. A correctly sized wire operating within specification

B. An inadequate wire gauge for the current and distance

C. A failed load drawing more current than rated

D. Internal corrosion or broken strands creating resistance

2. A vehicle has a blown 30-amp fuse protecting multiple circuits. After replacing the fuse, all circuits work correctly for 20 minutes before the fuse blows again. This intermittent pattern indicates:

A. An intermittent short circuit that appears after warm-up

B. A defective fuse from the replacement batch

C. Normal cycling of the protected circuits

D. A loose connection that sometimes makes and breaks

3. A technician performing voltage drop testing on a ground circuit finds 0.15 volts across a ground strap during a 20-ampere load test. This reading is:

A. Excessive, requiring replacement of the strap

B. Within acceptable specification for a healthy ground

C. Indicative of a completely open ground

D. A sign of overcharging from the alternator

4. A technician replaces a wire using appropriate gauge and heat-shrink sealing. Three days later, the repair fails intermittently. The MOST likely cause is:

A. Defective heat-shrink tubing material

B. Solder cold-joint creating intermittent contact

C. A poor crimp or improperly sealed splice allowing moisture intrusion

D. Normal break-in period for electrical repairs

5. A technician is asked to diagnose a fault on a vehicle operating normally in the shop but failing intermittently in the customer's environment. The effective approach is to:

A. Use a data logger or freeze-frame data to capture conditions during the fault

B. Replace the battery as the most common intermittent cause

C. Tell the customer the vehicle is fine and send them on their way

D. Replace all the body electrical modules as a precaution

6. A vehicle displays a B1000 code indicating an intermittent left front door switch signal fault. The technician should:

A. Immediately replace the door switch

B. Clear the code and send the vehicle home

C. Replace the entire BCM to be safe

D. Scan with live data to observe the switch signal while manipulating the door

7. A technician discovers a wire insulation has worn through against a sharp metal edge. The correct repair includes:

A. Wrapping with electrical tape only

B. Applying dielectric grease over the damage

C. Proper wire repair with adhesive-lined heat-shrink AND protection against future chafing

D. Ignoring the damage if the wire is still intact

8. A battery shows 12.6 volts at rest. The technician then removes the surface charge by turning on headlights for 2 minutes, then retests and reads 12.45 volts. This indicates:

A. A defective battery with poor state of charge

B. A battery with proper surface charge removal now reading actual state

C. An overcharged battery that lost voltage during the test

D. A completely discharged battery requiring replacement

9. A vehicle has been sitting for two weeks in cold weather. Upon attempting to start, the engine cranks slowly then stops. The battery passes a conductance test after warming to room temperature. The ROOT CAUSE is:

A. Combined effect of cold temperature and partial discharge reducing available cranking amperes

B. A completely failed battery that needs replacement

C. A failed alternator that didn't charge before storage

D. A parasitic drain draining the battery during storage

10. A starter cranks the engine but produces an abnormal grinding sound. The technician should:

A. Continue to operate the vehicle normally

B. Replace the starter immediately without inspection

C. Inspect the starter pinion and flywheel ring gear for damage

D. Replace only the battery if voltage is low

11. A vehicle with a start-stop system fails to perform automatic engine stops. The battery state of charge is 75%. The MOST likely cause is:

A. Normal operation of the start-stop system

B. Battery state of charge below the threshold for stop-start operation

C. Failed stop-start button on the dash

D. A software update has disabled the feature

12. A starter draws 120 amperes during cranking on an engine normally drawing 200 amperes. The battery voltage is 12.2 volts during cranking. The MOST likely cause is:

A. Starter internal damage causing high current draw

B. Normal operation for this application and temperature

C. A failed voltage regulator affecting starting

D. High resistance in the starting circuit reducing current

13. A technician disconnects the battery to replace a component. After reconnection, the vehicle shows multiple strange behaviors. The MOST likely cause is:

A. Loss of volatile memory in modules that need relearning or configuration

B. A failed battery that needs replacement

C. Multiple simultaneous component failures

D. A short circuit created during reconnection

14. A battery that has been discharged below 10.5 volts and recharged to rated voltage:

A. Should operate normally for the remainder of its life

B. May show signs of reduced capacity from sulfation damage

C. Will immediately fail again upon next discharge

D. Has better performance than before due to equalization

15. A technician installs a new AGM battery in a vehicle with a computer-controlled charging system. The vehicle's BMS requires:

A. Battery registration or relearn to update charging parameters

B. No action — modern systems automatically adapt

C. A full discharge cycle to teach the BMS

D. Driving 500 miles before the system adjusts

16. A vehicle has a cycling charging system warning lamp. At 2,000 RPM with no accessories, voltage is 14.2V. At idle with headlights and HVAC active, voltage drops to 12.3V. The MOST likely cause is:

A. A normal condition for modern computer-controlled charging

B. A completely failed voltage regulator

C. A discharged battery unable to accept charging

D. An alternator that cannot meet load demand at idle RPM

17. A technician performing a parasitic draw test finds 280 milliamperes. The vehicle's typical acceptable draw is 30-50 milliamperes. The next step is to:

A. Replace the battery as the source of the drain

B. Reset all modules by disconnecting the battery for an hour

C. Systematically pull fuses to identify the affected circuit

D. Tell the customer the reading is normal

18. A customer's vehicle has a computer-controlled charging system that commands reduced voltage during highway cruise. This is:

A. Normal behavior designed to improve fuel economy with a fully charged battery

B. A failed voltage regulator commanding incorrect output

C. An alarm condition indicating battery failure

D. A sign of an undersized alternator for the vehicle

19. An alternator with damaged stator windings may produce:

A. Perfect DC output with no problems

B. Normal output at all RPMs and loads

C. Reduced output capacity or uneven phase output

D. No output at all, complete failure

20. A technician replaces an alternator three times in six months. The charging system always fails with similar symptoms. The ROOT CAUSE is MOST likely:

A. Each replacement unit being defective from the parts store

B. An external cause destroying each alternator, such as a short in a downstream load

C. Normal wear and tear accelerated by vehicle use

D. The charging system warning lamp is simply malfunctioning

21. An HID headlight assembly requires service. Before opening the assembly, the technician should:

A. Open the assembly while the ignition is in RUN position

B. Use conventional incandescent test lights to verify power

C. Disconnect the battery and wait for the HID ballast capacitors to discharge

D. Test the HID ballast voltage with the engine running

22. A customer complains that their daytime running lights stay on even when the engine is off. The MOST likely cause is:

A. A failed DRL relay stuck in the closed position

B. A normal condition for vehicles sold in Canada

C. The headlight switch is in the DRL-override position

D. A short to power in the headlight circuit

23. A turn signal circuit that flashes at normal rate in the shop but flashes rapidly when driving in heavy rain indicates:

A. A normal condition for wet-weather driving

B. Water intrusion in a connector causing intermittent ground

C. A failed turn signal flasher relay requiring replacement

D. A short circuit that only appears when the wire gets wet

24. A technician is replacing a rear tail light assembly. After installation, the light doesn't work. The bulb is good and the socket shows voltage. The MOST likely cause is:

A. A blown fuse that was blown before the repair

B. A ground contact issue in the new tail light assembly

C. A damaged cluster module affecting only one tail light

D. A failed brake light switch affecting the rear light

25. A modern instrument cluster displays a master warning indicator lamp along with a specific icon. The technician should interpret this as:

A. A general maintenance reminder needing attention

B. A specific fault in the system indicated by the icon

C. A normal post-startup self-test display sequence

D. A system-wide failure requiring cluster replacement

26. A head-up display shows information from multiple vehicle systems. If the HUD shows engine RPM but not vehicle speed, the fault is MOST likely in:

A. The vehicle speed data source (ABS module) or its broadcasting

B. The HUD display module itself

C. The windshield optical coating

D. The HUD projector bulb nearing end of life

27. A cluster-mounted tachometer reads zero RPM while the engine operates normally. Scan tool shows correct RPM from the ECM. The fault is MOST likely in:

A. The crankshaft position sensor output

B. The engine control module's RPM calculation

C. The fuel injection system affecting RPM reading

D. The cluster's reception or processing of the RPM signal

28. A driver information center (DIC) displays "Service Air Bag" after a battery replacement. The MOST likely cause is:

A. A normal condition indicating SRS is being diagnosed

B. A failed airbag requiring replacement

C. The SRS module has lost configuration and needs reprogramming

D. The battery itself is faulty

29. A power window that operates normally when cold fails to operate when the vehicle is fully warmed up. The MOST likely cause is:

A. Worn brushes in the window motor that fail when hot

B. A thermal expansion issue causing intermittent connections

C. Normal wear and tear of the window motor

D. A dead battery that only fails when warm

30. A rain-sensing wiper system that has been working correctly suddenly activates continuously in dry weather. After verifying the windshield is clean, the NEXT diagnostic step should be:

A. Replace the rain sensor module immediately

B. Disconnect the wiper fuse to disable the system

C. Install a new windshield with rain sensor compatibility

D. Scan the BCM for DTCs related to the rain sensor circuit

31. A remote keyless entry fob has been replaced due to a lost fob. The new fob requires:

A. Programming to the vehicle using manufacturer-specific procedures

B. No action — it should work immediately

C. Simply pressing the unlock button near the vehicle

D. A factory reset of the vehicle's immobilizer

32. A horn that operates from the steering wheel but not during a panic alarm has a fault in:

A. The horn itself

B. The horn ground connection

C. The fuse for the horn circuit

D. The BCM's panic alarm circuit or output driver

33. A heated steering wheel that gets hot in certain areas but not others MOST likely has:

A. Normal operation that varies by wheel material

B. A broken or damaged heating element in the cold spots

C. A thermostatic cutoff working correctly

D. A failed control module affecting only part of the wheel

34. A tire pressure monitoring system (TPMS) warning light stays illuminated after tire pressures have been verified correct. The MOST likely cause is:

A. A failed TPMS module that always indicates low pressure

B. The tires need to be rotated to reset the sensors

C. A TPMS sensor failure or system relearn procedure required

D. The spare tire is low on pressure

35. A remote keyless entry system fails only in cold weather below freezing. The fob battery tests at 2.8V (normal is 3V). The MOST likely cause is:

A. Normal battery performance reduced at cold temperatures

B. The vehicle's receiver malfunctions in cold weather

C. A programming issue requiring resynchronization

D. The RKE antenna has corroded in cold weather

36. A memory seat function recalls position correctly for one driver but randomly for another. The MOST likely cause is:

A. A failed seat motor requiring replacement

B. Normal wear of the memory function

C. A failed seat control module

D. One driver's memory positions have been corrupted or improperly stored

37. A power sliding door on a minivan fails to close completely when commanded. The door closes partway and stops. The MOST likely cause is:

A. A failed master control button on the dash

B. The door lock actuator has failed at the latching position

C. An obstruction sensor detecting something in the door path

D. A failed BCM output driver for the door circuit

38. A vehicle's entire infotainment system has gone blank after an OTA software update. The vehicle still runs normally. The MOST effective next step is:

A. Attempt a system reboot or contact the dealer for firmware recovery

B. Replace the infotainment head unit

C. Disconnect the battery for 24 hours

D. Drive the vehicle for 500 miles to allow self-recovery

39. A passive entry/passive start (PEPS) system fails to detect the fob near the driver's door handle. The fob works normally for all other functions. The MOST likely cause is:

A. A failed low-frequency antenna near the driver's door specifically

B. A dead fob battery affecting only this function

C. A failed ignition switch affecting PEPS

D. A discharged vehicle battery

40. A rear defogger operates but gets only slightly warm. The voltage drops from 12.5V at key-on to 11.8V when the defogger is activated. The MOST likely cause is:

A. Normal operation of the defogger circuit

B. A failed defogger relay with partial contact

C. Excessive resistance in the defogger circuit or bus bars

D. A failed BCM output driver to the defogger

41. A power tailgate reverses direction mid-close with no visible obstruction. The MOST likely cause is:

A. Normal operation of the safety system

B. An obstruction sensor detecting current spike indicating potential pinch

C. A failed tailgate hinge with excessive friction

D. A discharged battery causing system reset

42. An electronic park brake (EPB) fails to release when commanded. The vehicle cannot be driven. The MOST effective diagnostic approach is:

A. Manually attempt to release the mechanical cable

B. Replace the EPB actuators

C. Reset the BCM to clear any fault codes

D. Scan the EPB module for DTCs and check actuator power/ground

43. A drive mode selector button switches between "Comfort" and "Sport" modes. If the mode selection doesn't seem to change anything, the MOST likely cause is:

A. A disconnected wire from the drive mode selector to the BCM

B. The modes are identical on this specific vehicle

C. A failed ECM affecting drive mode response

D. Normal behavior for vehicles without active suspension

44. A vehicle's rear view camera image shows distortion and reduced clarity compared to when the vehicle was new. The MOST likely cause is:

A. A failed camera lens cover with accumulated water

B. Normal aging of the camera electronics

C. Dirt, debris, or condensation on the camera lens that can be cleaned

D. A failed display module needing replacement

45. A CAN bus in the vehicle's OBD-II connector shows 60 ohms between CAN-H and CAN-L with the ignition off. The vehicle has communication issues with multiple modules. The MOST likely cause is:

A. A short between CAN-H and CAN-L

B. An open circuit preventing termination

C. Normal CAN bus operation with no issues

D. A faulty gateway module affecting multiple networks

46. A vehicle's OBD-II connector provides no power, yet the vehicle operates normally. The MOST likely cause is:

A. A blown fuse specifically for the OBD-II connector power

B. A failed BCM affecting only the diagnostic port

C. A normal condition during vehicle warm-up

D. A failed scan tool that cannot communicate

47. A technician receives a vehicle with a "Check Engine" light. Scan tool shows the ECM is not responding. The MOST effective initial diagnostic step is:

A. Replace the ECM without further testing

B. Check ECM power and ground, then verify communication path

C. Clear all codes and wait for the issue to return

D. Replace the scan tool with a different model

48. A vehicle's gateway module has failed. The symptoms will MOST likely include:

A. Only one specific module failing to communicate

B. Engine runs normally but infotainment has issues

C. Immediate engine shutdown and no starting

D. Multiple seemingly unrelated systems failing simultaneously

49. A technician is working on a hybrid vehicle's high-voltage system. Before beginning work, the technician MUST:

A. Disconnect only the 12-volt battery

B. Put the vehicle in service mode

C. Follow OEM shutdown procedures including isolation verification of the HV system

D. Keep the ignition on for diagnostic reference

50. A vehicle's electrical system fails after the customer has done "their own" repairs. The MOST effective approach is:

A. Carefully inspect all customer modifications, including added wiring, for shorts or incorrect connections

B. Quote a flat-rate for complete rewiring

C. Refuse the repair due to customer modifications

D. Simply replace the battery and ECM

Practice Exam 20: Answer Key and Explanations

1. D — A 16 AWG wire carrying 10 amperes over 4 feet should produce minimal voltage drop (typically well under 0.5V). A 1.5V drop at these conditions indicates significantly higher resistance than the wire's rated specification, which typically results from internal corrosion, broken strands inside the insulation, or damage that isn't visible externally. This level of voltage drop demands wire replacement, not simply re-termination.

2. A — A fuse that blows after a consistent time period (20 minutes) rather than randomly indicates a thermal-related intermittent short. Heat causes a normally-safe wire contact to deform enough to create intermittent contact with ground. As the harness cools, the contact breaks and the fuse blows. This pattern is diagnostic of thermally-driven faults requiring harness inspection under load.

3. B — A voltage drop of 0.15V across a ground strap carrying 20 amperes is well within the acceptable threshold of 0.2V for ground circuits. This reading indicates a healthy ground connection with minimal resistance. Higher readings would suggest cleaning or repair; lower readings confirm the ground is functioning correctly.

4. C — A repair that fails intermittently three days after completion indicates moisture intrusion into a poorly-sealed splice. The splice may have appeared correct initially but the crimp or heat-shrink seal

was compromised, allowing moisture to enter. As humidity fluctuates, the splice conducts or doesn't conduct. Proper sealing is critical for long-term repair reliability.

5. A — Intermittent faults that appear only in specific customer conditions require real-world data capture. A data logger or scan tool with freeze-frame capabilities records conditions present when the fault occurs. This information provides the context needed to diagnose the underlying cause, which isn't apparent in the shop environment.

6. D — A B1000 code indicating intermittent door switch signal requires diagnosis, not replacement. Using the scan tool's live data view while manipulating the door switch (opening, closing, testing intermediate positions) allows the technician to see when the signal anomaly occurs. This data-driven approach identifies the specific failure mode that code alone doesn't reveal.

7. C — Worn wire insulation from chafing requires both electrical repair (restoring continuity and insulation) and mechanical protection against future damage. Simply repairing the wire without addressing the sharp edge that caused the damage will result in repeat failures. The best repair includes proper wire replacement AND installing protective loom, grommet, or edge protection.

8. B — When removing surface charge, the battery voltage should drop from the inflated open-circuit reading (12.6V) to the true state-of-charge reading. A drop to 12.45V indicates the battery has approximately 75-85% state of charge. This is the accurate measurement; the 12.6V reading included surface charge that must be removed before accurate assessment.

9. A — Cold temperature dramatically reduces battery chemical activity. A partially discharged battery at cold temperature may not have enough cranking capability to start the engine, even if the battery itself is fundamentally healthy. Two-week cold storage causes both partial discharge and cold-weather performance reduction — together producing slow cranking that stops. Warming and charging the battery typically restores normal operation.

10. C — A grinding sound during cranking indicates the pinion and flywheel ring gear are not engaging correctly. The starter pinion tooth may be damaged, the ring gear may have worn teeth, or the pinion engagement mechanism may have failed. Inspecting these components identifies the specific wear or damage that is causing the abnormal sound.

11. B — Start-stop systems require adequate battery state of charge to function. Most start-stop systems disable automatic engine stops when battery SOC drops below approximately 80-85%. A 75% SOC is

typically insufficient, and the system won't engage. This is normal protective behavior; the system will resume when battery reaches adequate charge.

12. D — A starter drawing less current than normal (120A vs. 200A typical) combined with voltage drop during cranking (12.2V vs. 12.6V rest) indicates voltage drop in the starting circuit. The starter is receiving reduced voltage and therefore produces reduced torque and current draw. High resistance in the starting circuit is the cause, not starter damage.

13. A — After battery disconnection, modules with volatile memory lose their learned adaptations and may need relearning procedures or configuration. Symptoms like erratic transmission shifting, A/C not cycling correctly, or other adaptive features not performing properly are typical. Most symptoms resolve with driving cycles or a scan tool relearn procedure.

14. B — A battery discharged below 10.5V has experienced plate sulfation — lead sulfate crystals have hardened on the plates. Even after recharging to rated voltage, the battery typically shows reduced capacity because the sulfation has permanently reduced active material. The battery may function but performance and life are diminished.

15. A — New AGM batteries installed in vehicles with BMS require battery registration or relearn using a scan tool. This updates the charging parameters specific to the new battery's characteristics. Without registration, the BMS continues using parameters for the old battery, potentially overcharging or undercharging the new AGM battery and shortening its life.

16. D — An alternator that maintains voltage at 2,000 RPM but cannot maintain voltage at idle with load has insufficient output capacity for the combined electrical demand at idle RPM. This is a worn alternator or undersized alternator for the current load profile. The warning lamp illuminates when voltage drops below a threshold, cycling as conditions change.

17. C — A parasitic draw of 280 mA (nearly 10x normal) indicates a module or circuit is not entering sleep mode. Systematic fuse-pulling is the standard diagnostic approach. When a specific fuse is pulled and the draw drops significantly, the fault has been traced to a circuit protected by that fuse. Further diagnosis narrows to the specific component.

18. A — Computer-controlled charging systems intentionally reduce voltage during highway cruise with a fully charged battery. This improves fuel economy by reducing alternator load. Reduced voltage

during cruise is normal system behavior and should not be confused with a charging fault. Understanding this adaptive behavior prevents unnecessary diagnostics.

19. D — Damaged stator windings prevent the alternator from producing AC output for the rectifier bridge to convert. Without the AC input from the stator, the rectifier cannot produce DC output, resulting in no charging output. This is a complete alternator failure that requires replacement.

20. B — Repeated alternator failures in short time periods indicate an external cause destroying each unit. Common causes include a short in a downstream load that draws excessive current through the alternator, a failed rectifier elsewhere creating back-EMF, or a parasitic drain condition. Without identifying and fixing this root cause, each replacement alternator will also fail.

21. C — HID ballasts store dangerously high voltage in capacitors that remain energized after the ignition is off. Before any HID service, the battery must be disconnected and time allowed for the capacitors to discharge. Testing with ignition on or using conventional test lights creates electrocution hazards. This safety procedure is mandatory.

22. A — Daytime running lights that stay on when the engine is off indicate a failed DRL relay stuck in the closed position. The relay's contacts have welded or fused in the conducting state, so the circuit remains complete even when the DRL command should be off. Relay replacement is the permanent fix.

23. B — A turn signal that operates normally in the shop but fails when wet indicates water intrusion into a connector causing intermittent ground. When the connector is dry, the circuit functions; when water enters the connector, it creates a ground path that shorts the circuit. Testing after cleaning and drying the connector verifies this.

24. B — After tail light assembly replacement with bulb and voltage verified, a poor ground contact in the new assembly is the likely cause. The assembly has a ground path that wasn't properly installed or has oxidation between the housing and the grounding point. Cleaning and tightening the ground restores operation.

25. B — A master warning indicator along with a specific icon tells the technician precisely which system has a fault. The icon indicates the specific subsystem (engine, brake, lights, HVAC, etc.), and scanning that module for DTCs identifies the specific problem. This systematic approach is more efficient than arbitrary diagnosis.

26. A — If the HUD shows RPM but not vehicle speed, the RPM data is reaching the HUD correctly but vehicle speed is not. The RPM source (ECM) is transmitting to the HUD; the vehicle speed source (ABS module) is not. This isolates the fault to the vehicle speed data source or its broadcasting rather than the HUD itself.

27. D — When the scan tool shows correct RPM but the cluster displays zero, the RPM data is being transmitted correctly on the network. The fault is in the cluster's reception or processing of the RPM signal. The cluster may have software corruption, internal hardware damage, or a loose network connection specific to the cluster.

28. C — After battery replacement, the SRS module may have lost configuration data and will display a service reminder. This is normal behavior requiring reprogramming or configuration restoration through the scan tool. The airbag itself has not failed; the module has simply lost its configuration memory and needs to be reinitialized.

29. B — A power window that works when cold but fails when warm indicates thermal expansion is causing an intermittent connection. A connector contact expands differently than its housing, or a solder joint weakens as temperature increases. The contact is making intermittent contact at the specific temperature transition. Locating the affected component through heat application identifies the specific location.

30. D — A rain sensor activating continuously in dry weather with a clean windshield indicates a fault in the sensor itself, its wiring, or the BCM's interpretation of the signal. Scanning the BCM for DTCs related to the rain sensor circuit identifies the specific fault. This systematic approach avoids blindly replacing components.

31. A — Key fobs contain security transponders that must be programmed to the specific vehicle's immobilizer. A new fob doesn't work until it's programmed to the vehicle using manufacturer-specific procedures. Simple proximity or button-pressing doesn't authenticate an unprogrammed fob. Programming requires manufacturer-approved tools and procedures.

32. D — If the horn works from the steering wheel but not during panic alarm, the horn and ground are functional. The panic alarm path is routed through the BCM's output driver. A fault in this circuit prevents the panic function from activating the horn. The horn itself, its ground, and its fuse are all functional since the steering wheel command works.

33. B — Heated steering wheels have elements distributed throughout the wheel. If certain areas heat but others don't, a break in the heating element prevents current from reaching those specific sections. This is usually visible or detectable through continuity testing of the element. Replacement of the heated steering wheel is required.

34. C — A persistent TPMS warning indicates either a sensor failure, a battery failure in a sensor, or the system has not been relearned after tire service (rotation, replacement, sensor replacement). Each sensor has a unique ID that must be registered to the BCM. Without proper relearn, the system cannot identify sensor-to-wheel location.

35. A — Lithium batteries in key fobs are sensitive to cold temperatures. A battery at 2.8V in freezing conditions may not have enough energy to drive the fob's transmitter reliably. This is normal cold-weather battery performance reduction. The fob will work normally in warmer temperatures.

36. D — If one driver's memory recalls correctly but another's is unreliable, the issue is specific to that driver's stored positions. The driver may have saved corrupted positions, or the stored data has drift over time. Resaving the positions or factory-resetting the memory typically resolves the issue.

37. C — Power sliding doors include obstruction sensors that prevent closing if something is detected in the door path. The sensor detects a current spike (from contact with an obstruction) and reverses or stops door movement. This is a safety feature. If the door stops partially closed without visible obstruction, the sensor may be falsely triggered by a slight misalignment or debris.

38. A — An OTA update that fails mid-process may have partially corrupted the infotainment firmware. A system reboot may restore operation; if not, the dealer has specific tools to recover or reflash the corrupted firmware. Battery disconnection or extended driving won't fix a firmware-level issue.

39. A — If the fob works for all functions except detection at the driver's door, the specific low-frequency antenna at that door has failed. The fob is functional (since other functions work); the receiver/antenna at the driver's door is the specific fault. Replacement of the antenna typically resolves the issue.

40. C — Voltage dropping from 12.5V to 11.8V when the defogger is activated indicates excessive current draw or resistance in the circuit. The defogger produces heat but not enough because of the resistance dropping voltage. Corroded bus bar connections, damaged grid traces, or a deteriorating defogger element increase resistance and reduce heating capability.

41. B — Power tailgates use current-monitoring obstruction detection. Even without visible obstruction, the system may detect a current spike from old grease, ice, misalignment, or contact with a vehicle part during closing. The safety system reverses the tailgate to prevent damage or injury. Cleaning and lubrication often resolve these false obstruction events.

42. D — An EPB that fails to release has a specific cause detectable through the EPB module's DTCs. The module has recorded why it failed to release — battery voltage too low, sensor fault, actuator problem, or system interlock. Diagnosing the specific DTC and checking actuator power/ground identifies the actual fault for targeted repair.

43. A — If switching drive modes produces no noticeable change, the drive mode selector command isn't reaching the ECM or chassis modules that respond to mode changes. A disconnected wire from the selector to the BCM, or a communication fault between the BCM and the affected modules, prevents the mode change from being implemented.

44. C — A rear view camera showing distortion typically has dirt, debris, or condensation on the lens that can be cleaned. The camera is functional; the image quality is simply compromised by surface contamination. Cleaning the lens cover often restores clear images. Persistent issues may indicate internal camera failure.

45. D — A CAN bus with correct 60-ohm reading but multiple module communication issues has a functional electrical termination but faulty data routing. A gateway module failure prevents messages from being routed correctly between modules on different network branches. Replacement or reprogramming of the gateway typically resolves these widespread communication failures.

46. A — If the OBD-II connector has no power but the vehicle operates normally, the OBD-II-specific fuse has blown. The fuse protects only the diagnostic port power supply. Replacing the fuse typically restores power to the connector. This is a simple but commonly overlooked issue.

47. B — An ECM not responding to scan tool communication typically has a power, ground, or communication path issue. Checking ECM power (battery, ignition, switched) and ground (chassis, module ground) is the first step. Then verifying the communication path (wiring, connectors, gateway) identifies where the communication is failing. Replacement without diagnosis is wasteful.

48. D — Gateway modules connect multiple networks. When a gateway fails, messages cannot route between networks, causing modules on different branches to lose communication with each other. The

symptoms appear across multiple seemingly unrelated systems — cluster failing to show engine data, infotainment losing speed, climate unable to read temperatures, etc. Recognizing this widespread symptom pattern is diagnostic of gateway failure.

49. C — Working on hybrid high-voltage systems requires following OEM shutdown procedures, which typically include: disconnecting the 12V battery, disabling the HV system per service procedure, waiting for HV capacitors to discharge (typically 5-10 minutes), and verifying zero voltage at specific test points. Skipping these steps creates electrocution hazard. This is mandatory safety procedure.

50. A — When a customer has made modifications, the electrical failure is usually traceable to improper installation — missing fuses, wrong gauge wire, grounds bypassed, shorts created by poor connections, or wiring added to protected circuits. Careful inspection identifies these issues. Trying to fix the symptoms without addressing the customer's modifications wastes time and money.