PRACTICE EXAM 10: ASE L4 SIMULATION (50 QUESTIONS)

1. A customer reports that their adaptive cruise control stopped working after a recent battery replacement. A pre-repair scan shows a U-code in history status from the exact time of the battery replacement, along with current codes for loss of communication with the forward radar. The most productive interpretation is:

A. The replacement battery is defective and should be exchanged for a new unit

B. Every module on the vehicle has failed simultaneously and requires replacement work

C. Modules may require initialization or relearn after battery disconnection per OEM service information

D. Normal operation for all vehicles experiencing a battery replacement event

2. A scan tool measurement shows a CAN bus resistance of 55 ohms with the ignition off. This reading compared to the expected value indicates:

A. A marginal condition that may represent acceptable measurement variance or may indicate a partial short

B. A completely normal reading consistent with a healthy bus with expected 60 ohm value

C. One terminating resistor is missing from the bus causing increased resistance

D. A complete break in the bus with both terminators isolated from the meter

3. A vehicle exhibits intermittent forward camera calibration failures. Pre-repair diagnostic scans reveal that battery voltage during previous calibration attempts was 12.2 volts, 12.0 volts, and 11.8 volts during each respective failure. The most productive response is:

A. Replacing the forward camera based on the repeated calibration failures

B. Proceeding with calibration despite the voltage readings being close to minimum

C. Reprogramming the ADAS Central Module with the most current firmware version

D. Connecting a battery support unit to maintain voltage above 12.6 volts throughout calibration

4. Freeze frame data from a stored ADAS DTC shows the vehicle was at 35 mph with the engine at 1,800 RPM, ambient temperature at 14°F, and battery voltage at 11.9 volts. The most productive diagnostic focus considers:

A. Normal operating conditions that should not have triggered any DTC to set at all

B. Low voltage and cold temperature combination affecting module operation during the event

C. High engine RPM as the likely trigger for the DTC being stored in memory

D. Incorrect freeze frame data from the scan tool that requires factory reset

5. On the composite vehicle, a forward radar calibration requires a battery voltage above 12.6 volts, and the technician's battery support unit maintains voltage at 13.5 volts throughout. The scan tool reports successful calibration. If a road test reveals erratic ACC behavior, the next productive investigation considers:

A. Declaring the calibration valid since the battery support unit maintained proper voltage

B. Replacing the forward radar module since the calibration did not produce correct results

C. Reprogramming the ADAS Central Module with the current firmware version available

D. Other preconditions that may not have been met — target placement, floor slope, or vehicle loading

6. A customer's pre-repair scan shows codes indicating that the ADAS Central Module cannot communicate with the left rear corner radar. Resistance measurement across the private CAN bus reads 120 ohms at an accessible test point. The most accurate combined interpretation is:

A. Both the ADAS Central Module and the left rear corner radar have failed simultaneously

B. Normal operation with all terminators correctly installed on the private bus

C. One terminator is isolated — either the bus is broken or the left rear radar is missing/disconnected

D. A direct short between CAN-H and CAN-L causing the measurement to appear normal

7. A scan tool bidirectional test successfully activates the steering wheel haptic feedback actuator during a lane departure warning test. The scan tool data stream shows that the actuator's coil resistance is 38 ohms. Per the composite vehicle reference specification of 36 ohms ± 4 ohms, this reading is:

A. Within specification and confirms the actuator is functioning properly during the test

B. Below specification and indicates the actuator requires immediate replacement

C. Above specification and indicates the actuator is about to fail within weeks

D. An indication that the actuator's coil has shorted internally during testing

8. A customer reports that their ADAS warnings sometimes activate with no visible reason. Freeze frame data from the most recent warning shows vehicle speed at 45 mph, the forward radar detecting a target at 80 meters, and the ADAS Central Module issuing a warning command. The most productive investigation considers:

A. Normal operation that the customer should accept as a feature characteristic

B. Replacing the forward radar module based solely on the target detection reading

C. Reprogramming the ADAS Central Module with the most current firmware version

D. Whether the target actually existed or was a phantom detection from environmental factors

9. A CAN bus waveform shows CAN-H at 3.5 volts during dominant bits and CAN-L at 1.8 volts (instead of the expected 1.5 volts). The technician also observes excessive ringing on each bit transition. The most accurate combined interpretation is:

A. Normal CAN bus operation with acceptable amplitude mismatch during data transmission

B. A wire resistance issue on CAN-L combined with possible termination issues on the bus

C. Complete failure of every module on the bus simultaneously requiring replacement

D. The scan tool is measuring voltages incorrectly on both of the bus wires

10. A customer's vehicle has been brought in for an ADAS calibration. Pre-service inspection reveals that the tire pressures on all four tires are 5 psi above the door placard specification. The correct action before calibration begins is:

A. Proceeding with the calibration since the pressures are relatively close to specification

B. Increasing tire pressures further to 10 psi above placard for additional margin during calibration

C. Correcting the tire pressures to the placard specification before beginning the calibration

D. Reprogramming the ADAS Central Module to compensate for the tire pressure variance

11. A vehicle's pre-repair scan shows loss of communication codes for the forward camera and the multifunction forward facing camera heater. Both modules share a common power feed per the service information. The most productive first investigation considers:

A. The shared power supply circuit including the protecting fuse and common ground connections

B. Complete replacement of the forward camera module including the heater assembly

C. Reprogramming the ADAS Central Module with the current firmware release available

D. Performing a static calibration of the forward camera to reset its operating parameters

12. A technician measures the voltage drop across a ground connection from an ADAS module to the battery negative. The meter reads 0.12 volts under load. The accepted general threshold for a healthy ground connection is under 0.05 volts. The most accurate interpretation is:

A. The ground connection is completely open and requires immediate wire replacement

B. Normal operation with no concerns about the ground connection's condition

C. The ground connection is damaged but does not require any repair work

D. The ground connection has excessive resistance and warrants inspection or cleaning

13. On the composite vehicle, the public ADAS CAN bus should measure what resistance with the ignition off?

A. Approximately 30 ohms due to multiple terminators in parallel on the bus

B. Approximately 60 ohms from the two standard 120-ohm terminators in parallel

C. Exactly 120 ohms from a single terminator measuring across the bus

D. Over 240 ohms because the ADAS CAN bus uses higher-value terminators

14. A customer complains that their vehicle's ADAS works normally in dry weather but fails intermittently during rain. Pre-repair scan shows history codes for "camera view obstructed" captured during rainy conditions. The most likely cause is:

A. Complete failure of the forward camera requiring immediate replacement with a new unit

B. The Electronic Power Steering Module fails specifically during any rain events

C. Normal operation that the customer should accept as a feature limitation

D. Windshield wiper operation, camera view impairment, or water on the camera viewing area

15. A forward camera calibration aborts with a "preconditions not met" error. The scan tool shows four specific preconditions flagged, including tire pressure, vehicle loading, fuel level, and windshield cleanliness. The most productive response is:

A. Proceeding with the calibration despite the preconditions flagged as not met

B. Replacing the forward camera as the likely cause of the preconditions issue

C. Addressing each flagged precondition before retrying the calibration procedure

D. Clearing the codes and attempting the calibration once more with identical conditions

16. A scan tool data stream from the forward camera shows the camera reporting "lane markings detected" with specific position values that update as the vehicle moves. This data indicates:

A. The camera is functioning and detecting lane position in real time during operation

B. The camera has failed and requires immediate replacement with a new unit

C. Normal operation during a self-diagnostic test that has been manually initiated

D. The scan tool has generated the data artificially without real vehicle input

17. A customer's vehicle arrived with complaints of multiple ADAS malfunctions after a visit to an aftermarket audio shop. Pre-repair scans show U-codes across multiple CAN networks from the exact date of the audio installation. The most productive investigation considers:

A. Normal operation that should not relate to any audio system installation work done

B. The aftermarket audio installation's impact on shared electrical circuits and vehicle networks

C. Replacing every module showing codes as the most productive diagnostic step available

D. Complete reprogramming of the ADAS Central Module with the current firmware release

18. Post-repair scan comparison reveals that all codes from the pre-repair scan are cleared, but a new U-code for "communication with gateway module intermittent" has appeared during the repair work. The most appropriate action is:

A. Delivering the vehicle since the original codes have been cleared by the repair work

B. Replacing the Gateway Module with a new unit before proceeding with delivery

C. Clearing the new code and delivering the vehicle without further investigation

D. Investigating the new U-code to determine its cause before delivering the vehicle

19. A technician is comparing pre-repair and post-repair scans. The scan shows that one DTC remained stored through both scans unchanged. This indicates:

A. The repair was completely unsuccessful and the vehicle should not be delivered

B. Normal operation — some codes cannot be cleared by any repair work

C. The remaining code may be unrelated to the repair performed or requires additional work

D. The scan tool has malfunctioned and requires factory reset before further use

20. On the composite vehicle, a precondition for ADAS calibration specifies that the windshield must be clean and free of obstructions. A technician notices a small decal on the windshield that does not overlap the camera's view area. The correct action is:

A. Proceeding with the calibration since the decal does not overlap the camera's view

B. Removing the entire windshield and replacing it with a new one before calibration

C. Refusing the repair since any decal violates calibration preconditions absolutely

D. Cleaning the windshield with approved solvents to remove the non-obstructing decal

21. A customer's vehicle has been in for a major service including battery replacement. Post-service scans show multiple "steering angle sensor position invalid" codes. The most productive next action is:

A. Replacing the steering angle sensor with a new unit as the likely cause of the codes

B. Complete reprogramming of the Electronic Power Steering Module with new software

C. Reprogramming the ADAS Central Module with the most current firmware version

D. Performing the OEM-specified steering angle sensor relearn procedure after battery loss

22. Voltage drop testing on a ground wire from an ADAS module reads 0.08 volts under load. The positive side wire to the same module reads 0.22 volts under load. Both readings are within acceptable thresholds. The most accurate combined interpretation is:

A. The positive side has an unacceptable voltage drop that requires wire replacement

B. Both readings are within normal ranges and indicate a healthy circuit electrically

C. The ground side is showing excessive voltage drop requiring immediate repair

D. Both readings exceed normal ranges and indicate complete circuit failure conditions

23. A customer reports that lane keep assistance occasionally provides corrective steering in the wrong direction on straight roads with clear lane markings. Freeze frame from the most recent event shows vehicle speed at 58 mph and forward camera "lane position detected" with specific coordinates. The most productive investigation is:

A. Replacing the Electronic Power Steering Module as a likely source of the wrong-direction steering

B. Reprogramming the ADAS Central Module with the most current firmware version

C. Verifying camera calibration and inspecting for any camera view obstructions

D. Accepting the symptom as normal operation that cannot be resolved through diagnosis

24. A technician is explaining to an apprentice why the composite vehicle's forward-facing camera heater is specifically noted as serviceable separately. The correct reason is that:

A. Separate service prevents unnecessary camera replacement when only the heater has failed

B. Separate service is required by federal regulations for all camera heaters universally

C. Separate service means the camera itself cannot be replaced independently of the heater

D. Separate service is optional and most technicians replace the camera and heater as a set

25. A customer's vehicle had a front-end collision repair performed at another shop last month. The customer now reports intermittent ACC disablement. Pre-repair scan shows U-codes for intermittent forward radar communication. The most productive investigation considers:

A. Normal ACC behavior following any collision regardless of the severity of the impact

B. Complete replacement of the forward radar based on the intermittent communication codes

C. Reprogramming the ADAS Central Module with the most current firmware version

D. Possible radar miscalibration, physical disturbance, or bumper cover issues from the collision repair

26. A scan tool reports that a forward camera has been replaced, coded, and initialized successfully. The scan tool still shows a "calibration required" code. The correct interpretation is:

A. The replacement was unsuccessful and the camera must be replaced a second time

B. The calibration has not yet been performed — this is the expected post-replacement state

C. The scan tool is reporting incorrectly and the code can be cleared for delivery

D. The vehicle's battery requires immediate replacement to clear the calibration code

27. A customer reports that their driver monitoring system fails to recognize them when wearing sunglasses with mirrored lenses. The most likely cause is:

A. The driver monitoring camera has failed and requires replacement with a new unit

B. Complete failure of the infrared illuminators requiring immediate replacement work

C. Mirrored lenses blocking or reflecting the infrared imaging the system uses

D. Normal operation that the customer should accept as a feature limitation entirely

28. A camera-dependent feature fails only during early morning driving when the sun is directly in the camera's forward view. The most likely explanation is:

A. Temporary sun-glare sensitivity that can blind camera operation under specific conditions

B. Complete failure of the forward camera module requiring immediate replacement

C. The Electronic Power Steering Module's interference with the forward camera's operation

D. Normal operation that affects all ADAS vehicles regardless of the camera technology

29. Surround view camera calibration on the composite vehicle typically requires how many cameras to be correctly aligned to the vehicle's reference frame?

A. One camera positioned at the rear of the vehicle only in most cases

B. Two cameras — typically front and rear positions during the procedure

C. Three cameras — front, rear, and one side for basic coverage

D. Four cameras — front, rear, and both exterior mirror locations

30. A vehicle has had its windshield replaced with OEM glass. The pre-calibration inspection reveals a small scratch in the area of the camera's view. The most productive action is:

A. Proceeding with the calibration despite the scratch in the camera's view

B. Replacing the windshield again with another OEM unit at the customer's expense

C. Cleaning the scratch with lens cleaner to minimize the obstruction during calibration

D. Performing the calibration and hoping the scratch does not affect future operation

31. A forward radar module's scan tool data stream shows detected target range values that appear consistent with actual target positions across multiple test drives. The most accurate interpretation is:

A. The radar requires immediate replacement with a new unit despite the consistent readings

B. The Electronic Brake Control Module has failed and is falsifying the radar data stream

C. Normal operation that occasionally produces correct readings during diagnostic sessions

D. The radar is likely functioning correctly — investigation should focus on downstream components if issues persist

32. A customer's ACC brakes aggressively on specific stretches of highway. The forward radar was calibrated 4 weeks ago. Scan tool data during the aggressive events shows the radar detecting targets at realistic distances. The most productive investigation considers:

A. Replacing the forward radar immediately based on the aggressive braking behavior

B. Reprogramming the ADAS Central Module with the most current firmware version

C. Possible calibration drift or downstream decision-making factors affecting AEB thresholds

D. Normal operation that the customer should accept as a feature characteristic

33. On the composite vehicle, each corner radar module communicates over a private CAN bus. Each module contains a 120-ohm terminating resistor. If one terminator has failed open, the most likely diagnostic finding is:

A. A bus resistance reading of approximately 120 ohms instead of the healthy 60 ohms

B. Normal bus operation since one terminator is usually sufficient for bus function

C. A bus resistance of 30 ohms due to parallel connections in the failed state

D. Complete loss of all communication on the entire ADAS CAN network

34. A customer reports that blind spot warning no longer activates when vehicles approach from the rear. The vehicle was recently in for a bumper cover replacement at another shop. The most productive investigation considers:

A. Normal BSW behavior for all vehicles after any bumper cover replacement work

B. Corner radar mounting, connection, or calibration disturbance from the bumper work

C. Reprogramming the ADAS Central Module with the most current firmware release

D. Complete replacement of all four corner radars as a precaution against undetected damage

35. A radar static calibration procedure requires the target to be positioned precisely per OEM specification. The scan tool displays an "unable to complete — target not found" message. The technician has placed the target at the correct distance. The most productive next investigation considers:

A. Replacing the forward radar module based on the target-not-found error message

B. Proceeding with the dynamic calibration instead of static calibration to bypass the error

C. Reprogramming the ADAS Central Module with the most current firmware version

D. Possible obstructions in the radar beam path including the bumper cover or modifications

36. A customer reports that AEB triggered unnecessarily when driving under a metal footbridge overpass. The forward radar was correctly calibrated last year. The most likely cause is:

A. Complete failure of the forward radar module requiring replacement with a new unit

B. The Electronic Brake Control Module requires replacement after the incident occurred

C. Normal but unavoidable radar behavior — overhead metal structures can appear as potential threats

D. Reprogramming the ADAS Central Module with the current firmware will resolve the issue

37. On the composite vehicle, the forward radar module has a maximum detection range specified at approximately 160 meters. This range specification affects:

A. The radar's effective detection zone for ACC target acquisition during highway driving

B. The minimum detection distance required for AEB to activate during collision events

C. The ultrasonic sensor detection range at low speed during parking maneuvers

D. The driver monitoring camera's ability to detect driver attention state reliably

38. A customer's vehicle has had its rear bumper cover repainted with non-OEM paint. The customer reports erratic rear cross-traffic alert behavior. The most likely cause related to the paint work is:

A. Normal RCTA behavior that occurs after any bumper cover repainting work performed

B. Non-OEM paint may affect radar transparency in the rear corner radar operating frequency

C. The rear corner radars must be replaced after any bumper cover painting operations

D. Complete failure of the Ultrasonic Control Module during the painting operations

39. A corner radar has been replaced. Scan tool shows successful programming, coding, and initialization. The next required action is:

A. Delivering the vehicle to the customer since all setup steps have been completed

B. Complete reprogramming of the ADAS Central Module with the most current firmware

C. Running a dynamic drive cycle of 30 minutes without performing static procedures

D. Performing the OEM-specified calibration procedure for the replaced corner radar

40. A radar calibration was performed with the shop floor having a 2-degree total slope. The OEM specification limits slope to 1 degree. The scan tool reports calibration success. The most likely real-world outcome is:

A. Normal ADAS operation with no detectable consequences from the calibration procedure

B. Immediate complete radar failure within one day of the vehicle leaving the shop location

C. Silent miscalibration producing degraded ADAS performance the customer will discover during use

D. Automatic self-correction during the customer's subsequent drives with no issues

41. A forward radar bidirectional self-test passes through the scan tool. The customer's ACC still fails during driving. The most accurate interpretation is:

A. Self-test confirms basic function — the issue may be in calibration, communication, or downstream components

B. The radar must be replaced since the real-world failure persists after the test

C. The scan tool's self-test function is unreliable and should not be used for diagnosis

D. Normal operation that occasionally produces unexpected results in actual driving

42. Which of the following events is most likely to cause silent miscalibration of a forward radar?

A. Scan tool communication loss during the calibration procedure causing an abort

B. Unverified vehicle preconditions or target placement during the calibration procedure

C. Short circuits in the radar's supply wiring during the calibration procedure

D. Complete failure of the ADAS Central Module during the calibration sequence

43. A vehicle's pre-repair scan shows a U-code for intermittent loss of communication with the left rear corner radar. The complaint is intermittent BSW and RCTA failure on the left side. The most productive investigation is:

A. Replacing the left rear corner radar based solely on the U-code presence

B. Reprogramming the ADAS Central Module with the most current firmware release

C. Normal operation that does not require any corrective action in this case

D. Checking the left rear corner radar's supply, ground, and bus connections under load

44. On the composite vehicle, corner radar modules communicate with each other and with the ADAS Central Module over:

A. The public ADAS CAN bus shared with every other ADAS module on the vehicle

B. Direct hardwired connections with no network protocol involvement between modules

C. A private CAN bus separate from the public ADAS CAN bus for this communication

D. A cellular wireless connection routed through the Telematics Control Module externally

45. A customer's vehicle has been in a minor rear-end collision. The rear bumper cover was replaced with an OEM cover. RCTA is now working intermittently. The most productive investigation considers:

A. Declining to investigate since the collision occurred at another shop

B. Possible corner radar miscalibration or mounting disturbance from the bumper work

C. Complete replacement of every corner radar on the vehicle regardless of condition

D. Normal RCTA behavior that occurs after any rear-end collision regardless of severity

46. A customer's parking sensors have stopped working in cold weather only. The sensors appear clean in the warm shop. The most likely cause is:

A. Ice or snow accumulation on the transducer faces during cold driving that melts before shop arrival

B. Complete failure of every ultrasonic sensor simultaneously during cold weather events

C. The Ultrasonic Control Module requires complete reprogramming for cold weather operation

D. Normal operation that parking sensors always fail during any winter weather conditions

47. A single ultrasonic sensor has been identified as internally failed. The sensor is replaced, but the new sensor immediately shows the same failure code. The most productive next investigation is:

A. Replacing every ultrasonic sensor on the vehicle as a precaution against defective units

B. Complete reprogramming of the Ultrasonic Control Module with the current software

C. The sensor's connector, wiring, and supply circuit before assuming another defective sensor

D. Performing a dynamic calibration drive cycle to reset the ultrasonic system parameters

48. A customer reports that parking assist beeps continuously in an empty parking lot. The sensors appear clean upon inspection. Scan tool data shows one sensor reporting a constant 0.8 meter distance. The most likely cause is:

A. Normal operation — one sensor always reports a short distance during parking assist

B. The specific sensor reporting 0.8 meters has failed internally or has a contamination issue

C. Complete failure of the Ultrasonic Control Module requiring replacement with a new unit

D. Complete replacement of every ultrasonic sensor as a precaution against future failures

49. On the composite vehicle, bumper cover repainting that covers the ultrasonic sensor faces will most likely cause:

A. Signal attenuation and degraded or failed sensor operation requiring sensor cleaning or replacement

B. Enhanced sensor sealing with improved weather protection and no downside to operation

C. Complete sensor failure that resolves itself during the first few drive cycles automatically

D. Normal operation that is not affected by paint coating on the transducer faces

50. A customer reports that one specific ultrasonic sensor consistently reports a closer distance than reality. Other sensors report accurately. The most likely cause is:

A. Complete failure of the Ultrasonic Control Module requiring replacement with a new unit

B. The specific sensor has been installed at an incorrect angle or position in the bumper

C. Normal operation that all ultrasonic sensors frequently exhibit during service

D. Complete failure of every ultrasonic sensor requiring simultaneous replacement of all units

PRACTICE EXAM 10: ANSWER KEY AND EXPLANATIONS

1. C — Battery replacement can cause modules to lose learned data that must be re-established through specific initialization or relearn procedures per OEM service information. Investigating OEM requirements for affected modules is the productive first step, since U-codes from the exact time of the battery event strongly suggest the modules need post-battery procedures rather than physical replacement.

2. A — A CAN bus resistance of 55 ohms is close to the expected 60 ohms but below it, which represents a marginal condition. This could be acceptable measurement variance (within tolerance of multimeter accuracy) or an early indication of a partial short or added resistance path. Further investigation — including scope waveform analysis — is warranted to determine whether the reading indicates a genuine fault.

3. D — The documented voltage drops to 11.8V during previous calibration failures directly identify the cause: battery voltage below the 12.6V calibration minimum. A battery support unit must be connected to maintain stable voltage throughout the procedure. This is fundamental ADAS calibration practice that prevents exactly the pattern the freeze frame data reveals.

4. B — Battery voltage at 11.9V combined with cold temperature at 14°F creates an environment where modules operate at their electrical limits. Low voltage combined with cold battery chemistry reduces available current, which can trigger ADAS modules to disable themselves protectively. This combination is a well-documented cause of cold-weather intermittent ADAS symptoms that resolves when the electrical system warms or voltage recovers.

5. D — A calibration that shows success on the scan tool but produces erratic real-world behavior after the battery support was correctly maintained points to other preconditions being unmet. Target placement accuracy, shop floor slope, vehicle loading, or tire pressures can all cause silent miscalibration. Investigation of these preconditions is the productive next step before replacing the module.

6. C — A private CAN bus reading 120 ohms (instead of 60) means one terminator is isolated from the measurement point. Combined with loss of communication to the left rear corner radar, this suggests either the bus is broken between the measurement point and the left rear radar, or the left rear radar (which contains a terminator) is disconnected or has its internal terminator failed open.

7. A — A coil resistance measurement of 38 ohms is within the composite vehicle's specification of 36 ohms ± 4 ohms (tolerance range of 32 to 40 ohms). This reading confirms the actuator is

functioning electrically and the bidirectional test activation demonstrates functional output. The actuator is operating correctly and does not require replacement.

8. D — When the ADAS Central Module issues warning commands based on forward radar target data that cannot be correlated to actual conditions, the question becomes whether the target actually exists or is a phantom detection. Environmental factors (weather, radar interference, reflective surfaces) can cause phantom detections that trigger legitimate ADAS responses to false inputs.

9. B — Amplitude mismatch between CAN-H (3.5V) and CAN-L (1.8V instead of 1.5V) combined with excessive ringing on transitions indicates both a wire-resistance issue on CAN-L and possibly termination problems on the bus. Both symptoms together point to physical bus wiring issues requiring repair — not normal operation, not module failure, and not scan tool error.

10. C — Tire pressures 5 psi above placard specification affect vehicle ride height, which changes the angle at which ADAS sensors view the world. The correct pre-calibration action is correcting tire pressures to the placard specification before beginning the procedure. Proceeding with incorrect pressures introduces silent miscalibration risk that the scan tool cannot detect.

11. A — When two modules sharing a common power feed both lose communication, the shared power supply circuit becomes the most productive investigation. The protecting fuse, the power feed wiring, and the common ground connections for those modules are the statistically likely shared cause — not coincidental internal failure of two separate modules, not software issues, and not calibration concerns.

12. D — A voltage drop of 0.12V on a ground connection under load exceeds the typical 0.05V threshold for healthy grounds and indicates excessive resistance in the connection. This warrants inspection for corrosion, loose fasteners, or other connection problems. It is not a healthy reading, not a completely open circuit, but it does need repair to restore proper electrical performance.

13. B — The composite vehicle's public ADAS CAN bus uses standard CAN terminators (120 ohms each) in parallel, producing the healthy 60-ohm resistance reading with the ignition off. This is the universal CAN bus termination standard and applies to both the public and private ADAS buses on the composite vehicle architecture.

14. D — History codes for camera view obstruction during rain indicate the camera is having trouble seeing during wet conditions. This points to windshield wiper operation (whether wipers clear the camera's view), the camera's view area itself, or water on the camera area — not complete camera failure, not EPS module issues, and not a limitation the customer must accept without investigation.

15. C — The scan tool has identified four specific preconditions that must be addressed before calibration can succeed. The correct response is to address each flagged precondition (tire pressure, vehicle loading, fuel level, windshield cleanliness) and then retry the calibration. Proceeding

without addressing them produces silent miscalibration, and module replacement does not address the actual cause.

16. A — Forward camera data stream reporting "lane markings detected" with real-time position updates as the vehicle moves confirms the camera is functioning and detecting lane position during operation. This is normal behavior for a working camera, not an indication of failure, a self-diagnostic test, or artificially generated scan tool data.

17. B — U-codes appearing across multiple CAN networks from the exact date of aftermarket audio installation strongly suggest the audio installation affected shared electrical circuits or network wiring. Aftermarket audio installations frequently disturb existing circuits, and investigating this is the productive approach rather than dismissing the correlation or replacing modules speculatively.

18. D — A new U-code appearing during a repair but not present in the pre-repair scan requires investigation before delivery. The fault may be a connector disturbed during service, a wiring issue introduced, or another issue caused by the repair work. Clearing the code and delivering ignores the reality that a repair has introduced a new fault that needs addressing.

19. C — When a DTC persists through both pre-repair and post-repair scans unchanged, the most productive interpretation is that the code may be unrelated to the repair performed or may require additional work to address. This could be an unrelated pre-existing condition or an indication that additional work is needed — not repair failure, not normal operation, and not a scan tool malfunction.

20. A — A decal on the windshield that does not overlap the camera's view area does not violate the calibration precondition requiring the windshield to be clean and free of obstructions affecting the camera's view. The precondition is specifically about the camera's viewing area, not the entire windshield. Removing windshield items that don't affect the camera is unnecessary.

21. D — Steering angle sensor position invalid codes after battery replacement indicate the sensor has lost its learned zero-position reference that battery disconnection typically clears. The correct action is to perform the OEM-specified steering angle sensor relearn procedure, which re-establishes the zero-position reference. Sensor replacement and module reprogramming are not needed for this common post-battery issue.

22. B — Voltage drops of 0.08V on the ground wire and 0.22V on the positive side are both within healthy thresholds. The ground-side threshold is typically under 0.2V and the positive-side threshold under 0.5V for a complete run. Both readings indicate a healthy circuit electrically — no repair or replacement is needed for these voltage drops.

23. C — Wrong-direction steering from lane keep assistance with apparent forward camera function suggests either camera calibration drift or a view obstruction that's distorting the camera's interpretation of lane markings. Verifying camera calibration and inspecting for obstructions is the

productive investigation before replacing modules, reprogramming, or accepting the symptom as normal.

24. A — The composite vehicle's forward-facing camera heater is serviceable separately from the camera assembly, and this design prevents unnecessary camera replacement when only the heater has failed. This is a practical service consideration that saves parts cost and labor time compared to replacing the entire camera assembly just because the heater failed.

25. D — Intermittent ACC disablement with U-codes for intermittent forward radar communication, combined with recent front-end collision repair at another shop, points to possible radar miscalibration, physical disturbance during the repair, or bumper cover issues. Investigation of these factors is productive before assuming module failure or accepting the symptom as normal.

26. B — A "calibration required" code on a replacement camera that has been programmed, coded, and initialized is the expected state before calibration has been performed. Calibration is a separate required step that establishes the geometric reference. The code is not reporting failure — it's indicating that the calibration step remains to be completed.

27. C — Mirrored sunglass lenses block or reflect the infrared imaging that driver monitoring systems use to observe the driver's eyes. The mirror coating interferes with the infrared signal the camera relies on, producing the recognition failures described. This is a documented limitation of current infrared-based driver monitoring systems.

28. A — Temporary sun-glare sensitivity that temporarily blinds the forward camera when the sun is directly in its forward view is a documented limitation of current camera technology. The camera cannot see through intense direct sunlight, and the feature becomes temporarily unavailable. This is a feature limitation, not a hardware failure requiring replacement.

29. D — The composite vehicle's surround view system uses four cameras (front grille, rear, and both exterior mirrors) whose outputs are stitched together by the Surround View Module into a composite overhead image. All four cameras must be correctly aligned to the vehicle's reference frame for seamless image stitching during low-speed maneuvering.

30. B — A scratch in the camera's view area on a replacement windshield will affect camera operation and calibration reliability. The correct action is replacing the windshield again — this is not something cleaner can resolve and not something that should be left in place. The customer or warranty should cover the correction, depending on how the windshield was installed.

31. D — Forward radar data stream consistent with actual target positions across multiple tests suggests the radar itself is functioning correctly. If ADAS issues persist, the investigation should focus on downstream components — Electronic Brake Control Module behavior, ADAS Central Module decision-making, or output module response — rather than replacing the correctly-functioning radar.

32. C — Aggressive ACC braking on specific highway stretches with radar detecting targets at realistic distances suggests calibration drift or downstream decision-making factors affecting AEB thresholds. Investigation should consider whether the radar's alignment has drifted (even slightly) or whether the ADAS Central Module is making overly-aggressive decisions based on correct radar data.

33. A — A failed-open terminator on the composite vehicle's private CAN bus produces a resistance reading of approximately 120 ohms instead of the healthy 60 ohms, because only one of the two 120-ohm terminators is now in the circuit. This is the standard diagnostic signature of one terminator isolated or failed on any CAN bus architecture.

34. B — BSW failing to activate after a recent bumper cover replacement commonly traces to corner radar mounting or calibration disturbance from the bumper work. The physical handling of the radar during bumper service introduces small alignment changes that disable or degrade BSW until OEM-specified calibration is performed. This is a common real-world scenario.

35. D — "Target not found" despite correct target placement suggests something is obstructing the radar's beam path — typically the bumper cover itself, aftermarket modifications, badges, or debris. Inspecting for these obstructions is the productive next step before considering module replacement or procedural changes.

36. C — Metal footbridge overpasses can appear as potential threats to forward radar because the metal structure reflects radar energy even though the bridge is not in the vehicle's actual travel path. This is a known limitation of current radar ADAS systems rather than a malfunction, and even correctly calibrated radars can occasionally produce these false AEB events.

37. A — The composite vehicle's 160-meter forward radar detection range specification affects the radar's effective detection zone for ACC target acquisition during highway driving. This range determines how far ahead the radar can reliably detect target vehicles, which is directly tied to ACC's ability to maintain following distance at highway speeds.

38. B — Non-OEM paint may not meet the radar transparency specification required for the 77 GHz band used by rear corner radars. The material properties of non-OEM paint can attenuate radar signal and degrade detection performance, causing erratic RCTA behavior even when the radar module itself is functioning correctly. This is a documented issue with non-OEM paint in radar zones.

39. D — Every corner radar replacement requires OEM-specified calibration before vehicle delivery. Programming, coding, and initialization establish that the module is functional and recognized; calibration establishes geometric alignment to the vehicle's reference frame, which is a separate and mandatory step before the feature will operate correctly.

40. C — A 2-degree shop floor slope exceeds the OEM specification of 1 degree maximum for ADAS calibration. Performing calibration under this condition produces silent miscalibration — the scan

tool reports success but the geometric reference is incorrect by the slope amount. The customer experiences degraded ADAS performance that the shop caused by ignoring the precondition.

41. A — A radar's self-test passing confirms basic module-internal function but does not verify calibration parameters, communication pathways, or external conditions. The real-world failure persisting after passed self-test means the investigation must extend to these other factors — calibration parameters, bus communication under load, or bumper cover conditions.

42. B — Silent miscalibration is most often caused by unverified vehicle preconditions or incorrect target placement during the calibration procedure. These factors affect calibration geometry without triggering scan tool errors, so the procedure completes with incorrect parameters while reporting success. Scan tool communication loss, supply shorts, and module failures typically produce obvious failures rather than silent ones.

43. D — An intermittent U-code for loss of communication with the left rear corner radar warrants checking the radar's supply, ground, and bus connections under load. Intermittent electrical conditions require testing that reproduces the failure mode — not module replacement based solely on history codes, not software reprogramming, and not accepting the symptom as normal.

44. C — The composite vehicle's corner radar modules communicate with each other and with the ADAS Central Module over a private CAN bus that is separate from the public ADAS CAN bus. This private bus carries high-volume raw sensor data that would flood the public network if shared.

45. B — After a rear-end collision with bumper cover replacement, investigation of corner radar miscalibration or mounting disturbance is the productive approach for intermittent RCTA. Bumper cover work disturbs corner radar mounting, and OEM-specified calibration is required to restore correct operation. Declining to investigate or assuming normal behavior are inappropriate responses.

46. A — Cold-weather-only parking sensor failures with sensors appearing clean in the warm shop strongly suggest ice or snow accumulation on the transducer faces during cold driving. The ice melts as the vehicle is brought inside, and the system returns to normal. This is a well-documented environmental interaction with ultrasonic systems, not hardware failure.

47. C — When a replacement sensor immediately shows the same failure code, the issue is likely not in the sensor but in the connector, wiring, or supply circuit. The replacement sensor is inheriting the upstream condition. Investigation of the circuit rather than assuming multiple defective sensors is the productive approach.

48. B — A sensor reporting a constant 0.8 meter distance regardless of actual conditions has either failed internally or has contamination on its transducer face producing consistent false echoes. This is a single sensor fault — not a control module fault, not an issue requiring complete sensor replacement, and not normal operation for ultrasonic systems.

49. A — Paint applied over the ultrasonic sensor transducer face attenuates the ultrasonic signal and degrades or fails sensor operation. The paint physically impedes the sound energy the transducer must transmit and receive. Cleaning or sensor replacement is required to restore function, not normal operation or enhanced sealing.

50. B — An ultrasonic sensor reporting a consistently closer distance than reality is most likely mounted at an incorrect angle or position. The transducer face orientation affects measured distance directly, and incorrect mounting (from installation error or from bumper cover service) produces systematic readings that differ from actual physical distance.