PRACTICE EXAM 20: ASE L4 SIMULATION (50 QUESTIONS)

1. A customer brings in an ADAS-equipped vehicle complaining of intermittent ACC failures. Before any hands-on diagnosis, the correct first action is:

A. Replacing the forward radar module as a precaution against intermittent faults

B. Clearing all existing DTCs to establish a fresh diagnostic baseline state

C. Performing a pre-repair scan to document the vehicle's starting condition

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

2. On the composite vehicle, the forward-facing camera heater activates at an ambient temperature of approximately:

A. 50°F or 10°C or colder ambient temperature conditions

B. 32°F or 0°C or colder ambient temperature conditions

C. 0°F or -18°C or colder ambient temperature conditions

D. 70°F or 21°C or colder ambient temperature conditions

3. Technician A says a CAN bus resistance of 60 ohms indicates a healthy bus with two 120-ohm terminators in parallel. Technician B says a healthy bus with two 120-ohm terminators should measure 120 ohms. Who is correct?

A. Both technicians are correct under different circumstances entirely

B. Technician B only — the resistance should read 120 ohms for a healthy bus

C. Technician A only — parallel 120-ohm terminators produce 60 ohms resistance

D. Neither technician is correct about healthy CAN bus resistance readings

4. A scan tool displays freeze frame data showing "Battery Voltage: 11.7V" at the moment a U-code was set. The most productive diagnostic focus is:

A. Replacing the module that set the U-code with a new unit immediately now

B. Normal operation that requires no further investigation from the technician

C. Reprogramming the module with current firmware to prevent future code setting

D. The charging system and battery condition as the likely root cause investigation

5. On the composite vehicle, the left rear corner radar module serves which specific role on the private CAN bus?

A. The primary node that aggregates data from all four corner radar modules

B. A secondary backup node that only activates when primary nodes have failed

C. A terminating resistor provider with no data aggregation role whatsoever

D. A passive listener that never transmits data to other modules on the bus

6. A customer reports that automatic emergency braking triggered unexpectedly under a metal bridge overpass. The most accurate interpretation is:

A. Complete forward radar failure requiring immediate replacement with a new unit

B. Known radar limitation — overhead metal structures can appear as potential threats

C. The Electronic Brake Control Module has failed and requires replacement work

D. Scan tool software needs reprogramming before any further diagnostic work begins

7. A forward camera has been replaced. The correct sequence of post-installation actions is:

A. Calibration first, then coding, then programming the module with software

B. Delivering the vehicle immediately since physical installation is complete

C. Programming, coding, initialization per OEM procedure, then calibration

D. Only clearing codes without any other procedures after physical replacement

8. Windshield replacement on a vehicle equipped with a forward-facing ADAS camera typically requires:

A. Forward camera calibration per OEM position statement before vehicle delivery

B. Complete reprogramming of every module in the vehicle with current firmware

C. Installation of an aftermarket protective film in the forward camera view area

D. Replacement of the forward camera assembly during the glass service itself

9. A scan tool reports a CAN bus resistance of 40 ohms with the ignition off. The most likely interpretation is:

A. Normal operation with both terminators correctly installed in parallel on the bus

B. Complete failure of every module on the affected bus simultaneously requiring action

C. Only one terminator is present with the other disconnected from the bus

D. A short between CAN-H and CAN-L or additional parallel conduction on the bus

10. On the composite vehicle, each corner radar module contains a terminating resistor with a value of:

A. 60 ohms providing half of the normal parallel bus resistance value

B. 120 ohms combining in parallel for the standard 60-ohm termination on the bus

C. 240 ohms requiring extra isolation from the measurement circuit on the bus

D. 30 ohms compensating for longer wire runs between each of the corner modules

11. A voltage drop test is more diagnostically sensitive than a resistance measurement for connection diagnosis because voltage drop testing:

A. Uses a much higher test voltage than standard resistance measurements do

B. Requires specialized equipment beyond the capability of a basic multimeter

C. Is performed with the circuit energized under operating load showing real resistance

D. Measures continuity rather than voltage in the circuit being diagnosed currently

12. The composite vehicle's forward-facing camera lens handling requirement per the reference is:

A. Cleaning with approved lens cleaner and a microfiber cloth during service

B. Separate replacement of the lens as a serviceable component of the camera

C. Application of a new protective coating during every service visit performed

D. Replacement of the entire camera — the lens cannot be cleaned per the reference

13. A customer reports that forward collision warning chimed in heavy rain when no threats were visible. The most accurate interpretation is:

A. Complete forward camera and radar failure requiring replacement of both units

B. Known environmental limitation — heavy rain can affect both camera and radar

C. The Electronic Brake Control Module has failed requiring immediate replacement

D. Normal operation that should not require any investigation from the technician

14. A technician is about to perform an ADAS calibration. The required first action is:

A. Starting the calibration and addressing any scan tool precondition errors later

B. Clearing all existing codes and starting the calibration from a clean state

C. Running the procedure quickly to see whether it completes before verifying anything

D. Verifying all preconditions — battery voltage, tire pressure, loading, floor slope

15. A dashboard displays "Automatic High Beam: Disabled by Vehicle." The most likely cause is:

A. Complete failure of the forward camera requiring immediate replacement work

B. Temporary disablement — conditions the system cannot operate in such as bright lights

C. The Electronic Power Steering Module has failed during the night operation

D. Normal operation that should not occur under any driving condition ever possible

16. A pre-repair scan reveals 5 history codes and no current codes. The most accurate interpretation is:

A. The vehicle has major failure requiring replacement of every module with codes

B. Every code must be individually investigated before any repair work can begin

C. The codes reflect past events — investigate based on their relevance to current complaint

D. All codes should be cleared immediately before any further diagnostic investigation

17. On the composite vehicle, the ADAS Central Module's primary role is:

A. Receiving sensor inputs, running ADAS logic, and issuing output commands

B. Directly operating the brake hydraulic actuator during emergency braking events

C. Hosting the warning chime that sounds during lane departure warning events

D. Serving as a backup to the Gateway Module when the main networks have failed

18. Technician A says a forward radar bidirectional self-test that passes confirms the radar is functioning correctly in all respects. Technician B says a passed self-test confirms basic module function but does not verify calibration or downstream pathways. Who is correct?

A. Technician A only — self-tests verify all aspects of radar operation completely

B. Both technicians are correct under different specific circumstances of radar operation

C. Technician B only — self-tests confirm only basic function, not every aspect of operation

D. Neither technician is correct about what bidirectional self-tests actually confirm

19. A technician measures a ground connection voltage drop of 0.15V under load. The typical acceptable threshold is under 0.05V. The interpretation is:

A. Normal operation with no concerns about the ground connection condition

B. The ground connection is healthy and does not require any repair work

C. The ground connection is completely open and requires wire replacement immediately

D. The ground connection has excessive resistance warranting inspection or cleaning

20. On the composite vehicle, the steering wheel haptic feedback actuator coil resistance specification is:

A. 36 ohms with a tolerance of plus or minus 4 ohms

B. 12 ohms with a tolerance of plus or minus 2 ohms

C. 100 ohms with a tolerance of plus or minus 10 ohms

D. 50 ohms with no specified tolerance for the value

21. A customer reports that their vehicle's ADAS features "stopped working" after battery disconnection during unrelated service. The most productive response is:

A. Replacing every ADAS module as a precaution against battery-related damage

B. Checking OEM procedures for relearn requirements after battery disconnection

C. Performing a complete four-wheel alignment to reset all ADAS references now

D. Reprogramming every ADAS module with the current firmware release immediately

22. A forward camera calibration has been performed and the scan tool reports success. During a test drive, lane keep assistance behaves erratically. The most likely cause is:

A. Complete forward camera failure despite the scan tool reporting calibration success

B. Normal operation that customers should accept as a feature limitation always

C. The Electronic Power Steering Module has failed during the calibration procedure

D. Silent miscalibration — preconditions may have been unmet during the calibration

23. On the composite vehicle, the forward radar module's maximum detection range is specified at approximately:

A. 160 meters suitable for highway-speed ACC and AEB operational requirements

B. 80 meters suitable for short-range urban driving conditions only

C. 250 meters typical of luxury-segment long-range radar implementations

D. 40 meters typical of short-range parking radar configurations on vehicles

24. Non-OEM bumper covers with non-OEM paint in the forward radar zone may affect ADAS because:

A. Non-OEM covers always contain amplifiers that overload the radar receiver stage

B. Non-OEM paint produces electromagnetic interference at the 77 GHz operating band

C. The materials may not meet the radar transparency specification for the band

D. Non-OEM covers physically block the radar module from being installed in vehicles

25. A customer asks "Why is calibration needed after my bumper was replaced?" The correct response is:

A. Explaining that bumper replacement rarely triggers any ADAS calibration requirement

B. Explaining that bumper work disturbs radar mounting and calibration is required per OEM

C. Refusing to discuss calibration since the customer has already decided against it

D. Charging the customer extra for the calibration without explaining why it is needed

26. Enable criteria for a specific DTC are best described as:

A. The specific conditions a module must observe to run the diagnostic monitor for that code

B. The replacement parts required when the code is observed by the technician

C. The automatic time limit before the code self-deletes from the module memory

D. The sequence in which other modules must be programmed to clear the code setting

27. A technician compares two vehicles' CAN bus waveforms on an oscilloscope. Both show CAN-H rising to 3.5V and CAN-L falling to 1.5V during dominant bits. The interpretation is:

A. Both vehicles have failed bus architectures requiring immediate replacement

B. Both vehicles display normal healthy CAN bus differential signaling behavior

C. Only one of the two vehicles has a healthy bus based on the waveform shape

D. Scan tool software errors that require factory reset before further diagnosis

28. A forward camera supports which group of features on the composite vehicle?

A. Adaptive cruise control and automatic emergency braking at highway speeds

B. Blind spot warning and rear cross-traffic alert systems together always

C. Ultrasonic parking assist and the surround view composite image display

D. Lane departure warning, lane keep assistance, TSR, and automatic high beam

29. A customer reports driver monitoring warnings when wearing reflective sunglasses. The most likely cause is:

A. Complete failure of the driver monitoring camera requiring replacement work

B. Reflective lenses blocking or scattering the infrared imaging the system uses

C. Normal operation that should be ignored by customers and technicians alike

D. The Electronic Brake Control Module requires immediate replacement with new unit

30. A surround view camera has been replaced in the right exterior mirror housing. The required follow-up action is:

A. Calibration of the replaced side-view surround view camera per OEM procedure

B. Delivering the vehicle immediately without any calibration procedures required

C. Reprogramming the Surround View Module firmware with current software release

D. Replacement of all four surround view cameras simultaneously to maintain balance

31. Automotive radar for ADAS applications most commonly operates in which frequency band?

A. The 24 GHz band with limited remaining regulatory allocation in most regions

B. The 5.9 GHz band reserved for vehicle-to-vehicle communication protocol usage

C. The 76 to 81 GHz band commonly called 77 GHz automotive radar universally

D. The 2.4 GHz band shared with consumer Wi-Fi equipment in the general vicinity

32. A radar calibration has been performed on an unlevel shop floor. The scan tool reports success. The most likely long-term outcome is:

A. Gradual improvement of radar performance over the next several weeks of driving

B. Immediate complete radar failure within one day of leaving the shop's premises

C. Normal ADAS operation with no detectable consequences from the procedure ever

D. Silent miscalibration producing degraded ADAS performance the customer discovers

33. Silent miscalibration of an ADAS sensor is best defined as:

A. The sensor completely fails and sets an obvious fault code on the scan tool

B. The calibration procedure aborts immediately at the first precondition check

C. The procedure completes successfully but produces degraded real-world performance

D. The sensor physically damages itself during the calibration procedure attempt

34. A corner radar module has been replaced. The scan tool shows programming and coding completed. The next required step is:

A. Completing initialization per OEM procedure followed by calibration of the module

B. Delivering the vehicle immediately since programming and coding are complete

C. Complete reprogramming of every other module on the vehicle as a precaution

D. Dynamic calibration only during the next customer drive without any static procedure

35. On a typical ADAS vehicle, corner radar modules support which pair of features?

A. Adaptive cruise control and lane keep assistance with active steering input

B. Traffic sign recognition and automatic high beam control at nighttime operation

C. Ultrasonic parking assist and the surround view system image composite

D. Blind spot warning and rear cross-traffic alert detection systems together

36. A customer reports ACC behaves erratically on specific highway stretches only. The forward radar was calibrated 4 weeks ago. The most productive investigation considers:

A. Possible calibration drift, contamination, or mechanical disturbance since last service

B. Complete forward radar replacement without any diagnostic investigation first

C. Reprogramming of the ADAS Central Module with the most current firmware available

D. Normal ACC behavior that should not be investigated under any circumstances

37. The composite vehicle's forward radar module communicates detected target data to the ADAS Central Module via:

A. A dedicated private CAN bus only between these two specific modules always

B. The public ADAS CAN bus shared with other ADAS-related modules on the vehicle

C. A hardwired direct connection bypassing any CAN network communication entirely

D. A cellular connection routed through the Telematics Control Module for external access

38. A forward radar calibration requires the shop floor to be level within a specific tolerance. The typical OEM specification is:

A. 5 degrees total maximum across the entire calibration work area allowed

B. 10 degrees total maximum across the calibration area for most vehicles today

C. No maximum slope specification since floor conditions do not affect calibration

D. 1 degree total maximum across the calibration area per OEM specification

39. A scan tool data stream shows forward radar target range matching actual target distances across multiple readings. The most accurate interpretation is:

A. The radar is likely functioning correctly — investigate downstream components if issues exist

B. The radar requires immediate replacement despite the consistent matching readings

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

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

40. A technician is diagnosing a corner radar CAN bus issue on a vehicle. The correct starting sequence is:

A. Replacing each corner radar sequentially until the issue resolves on the vehicle

B. Reprogramming the Gateway Module as the first step for any CAN bus issue

C. Measuring bus resistance, observing waveforms, and verifying supply and ground

D. Clearing all codes and delivering the vehicle since private bus issues self-resolve

41. After radar calibration has been completed, the correct verification sequence before delivery is:

A. Delivering the vehicle immediately without any verification since calibration succeeded

B. Post-repair scan followed by operational road test of radar-dependent features

C. A second complete calibration immediately to verify the first result was valid

D. Keeping the vehicle overnight without any verification testing prior to delivery

42. The composite vehicle's ultrasonic sensors are mounted primarily in:

A. The windshield header near the forward-facing camera location inside the cabin

B. The exterior mirror housings alongside the surround view cameras in each mirror

C. The front and rear bumper covers at multiple positions along each fascia

D. The center of the dashboard pointing outward through the vehicle windshield

43. Ultrasonic sensors operate at frequencies in the range of approximately:

A. Audible frequencies between 2 and 20 kilohertz for driver alert purposes

B. Above human hearing at approximately 40 to 50 kilohertz for parking applications

C. Radio frequencies in the 77 GHz band shared with automotive radar systems

D. In the visible light spectrum with infrared detection combinations equipped

44. Paint applied directly over an ultrasonic sensor's transducer face typically results in:

A. Signal attenuation and degraded or failed sensor operation under all conditions

B. No effect on sensor operation so long as the paint is completely dried first

C. Improved weather sealing with no functional downside to sensor operation at all

D. Temporary disabling that reverses within a few driving cycles automatically

45. A customer reports parking sensors fail only in cold weather. Sensors appear clean in the warm shop. The most likely cause is:

A. Complete failure of the Ultrasonic Control Module during cold weather events

B. Normal operation that customers should accept during any winter weather conditions

C. Reprogramming requirement for cold-weather operation on the vehicle immediately

D. Ice or snow accumulation on transducer faces melting before arrival at the shop

46. A single ultrasonic sensor has been identified as internally failed. Supply and ground to the sensor are verified normal. The correct action is:

A. Replacing every ultrasonic sensor on the vehicle simultaneously as a precaution

B. Individual sensor replacement followed by scan tool verification of operation

C. Complete reprogramming of the Ultrasonic Control Module with current firmware

D. Performing a four-wheel alignment before replacing the ultrasonic sensor now

47. On the composite vehicle, the Ultrasonic Control Module communicates aggregated data to the ADAS Central Module via:

A. The public ADAS CAN bus shared with other ADAS-related modules on the vehicle

B. A dedicated private CAN bus only between these two specific modules always

C. A hardwired direct connection bypassing any CAN network protocol entirely

D. The cellular network through the Telematics Control Module for external access

48. Bumper cover repainting on an ADAS-equipped vehicle with ultrasonic sensors requires:

A. Painting the bumper cover with sensors in place to maintain factory installation positions

B. Covering the sensor faces with painter's tape during the painting procedure

C. Applying a protective coating of wax to the sensor faces before painting begins

D. Removing the ultrasonic sensors before painting and reinstalling after paint cures

49. A customer asks why rain affects their rear parking sensors. The correct explanation is:

A. Rain damages the sensors permanently and requires replacement after every rain event

B. Normal parking sensor behavior that should never vary based on weather conditions

C. Water droplets on the transducer faces can produce false echo returns temporarily

D. Parking sensors are not affected by rain or any other weather conditions whatsoever

50. A technician has completed an ADAS repair. The required verification sequence before delivery is:

A. Clearing all codes and delivering the vehicle without any operational road testing

B. Only a scan tool check since it confirms everything needed for delivery to customer

C. Only a road test since driving verifies the system more reliably than any tools

D. Both a post-repair scan and an operational road test of the repaired features

PRACTICE EXAM 20: ANSWER KEY AND EXPLANATIONS

1. C — Performing a pre-repair scan to document the vehicle's starting condition is the correct first action for any ADAS diagnostic work. This establishes the diagnostic baseline, protects the shop from liability for pre-existing issues, and guides subsequent investigation based on documented evidence rather than speculation or assumption.

2. A — The composite vehicle specifies the forward-facing camera heater activation temperature at approximately 50°F or 10°C or colder ambient temperature. This reference-sourced specification is commonly tested, and the heater also activates when either the front or rear defrost is commanded by the driver.

3. C — Technician A is correct. A healthy CAN bus has two 120-ohm terminators wired in parallel, which produces the standard 60-ohm resistance measurement. This is the universal CAN termination standard across manufacturers, and 120 ohms instead would indicate only one terminator is present in the measurement path.

4. D — Freeze frame data showing 11.7V at the moment a U-code was set points directly to the charging system and battery condition as the root cause. The ADAS module is responding correctly to low voltage by setting a fault code; the underlying electrical issue must be addressed rather than replacing the module or reprogramming firmware.

5. A — The composite vehicle designates the left rear corner radar module as the primary node on the private corner radar CAN bus. It aggregates data from all four corner radars and forwards the fused result to the ADAS Central Module over the public ADAS CAN bus — this aggregation architecture is commonly tested.

6. B — AEB triggering under a metal bridge overpass represents a known radar limitation — overhead metal structures can appear as potential threats because the metal reflects radar energy. A correctly calibrated radar can still produce these occasional false AEB events, and customer education about this limitation is appropriate.

7. C — The correct post-installation sequence for a replacement forward camera is programming, coding, initialization per OEM procedure, then calibration. Each step depends on the previous being complete, and skipping or reordering steps leaves the module in an incomplete state regardless of how well subsequent steps are performed.

8. A — Windshield replacement on an ADAS-equipped vehicle with a forward camera typically requires camera calibration per OEM position statement. The camera bracket is bonded to the

windshield, so glass service disturbs the mounting position, and virtually every major OEM requires recalibration afterward.

9. D — A CAN bus resistance reading of 40 ohms (below the healthy 60 ohms) indicates a short between CAN-H and CAN-L or an additional parallel conduction path. Readings below 60 ohms always indicate extra conduction somewhere on the bus that must be investigated and corrected.

10. B — Each corner radar module on the composite vehicle contains a 120-ohm terminating resistor. When two are active in parallel across the bus, they produce the standard 60-ohm resistance that characterizes a healthy CAN bus — this is consistent with industry-wide CAN architecture.

11. C — Voltage drop testing is performed with the circuit energized under operating load, revealing the actual resistance present when current is flowing. Standard resistance measurements use very low current and cannot detect the marginal connection issues that voltage drop testing exposes under real-world conditions.

12. D — The composite vehicle's forward-facing camera lens cannot be cleaned per the reference document; camera replacement is required when contaminated. Cleaning attempts damage the optical coating and create worse problems than the original contamination, making replacement the only supported response.

13. B — Forward collision warnings in heavy rain when no threats are visible represent a known environmental limitation — heavy rain can scatter radar signal and reduce camera visibility, producing occasional false activations. Both camera and radar can be affected by rain, and this is a documented real-world limitation rather than a hardware failure.

14. D — Before beginning ADAS calibration, all preconditions must be verified — battery voltage, tire pressure, vehicle loading, fuel level, floor slope, and target placement. Unverified preconditions are the single largest cause of silent miscalibration, and verifying them up front prevents wasted labor.

15. B — "Automatic High Beam: Disabled by Vehicle" indicates temporary disablement due to conditions the system cannot operate in — typically ambient brightness, camera visibility issues, or conflicting lighting. This is protective system behavior, not a hardware failure or complete system failure.

16. C — History codes reflect past events that occurred and later resolved. The correct interpretation is to investigate based on relevance to the current complaint rather than speculatively replacing modules, dismissing all history codes, or clearing them prematurely without analysis.

17. A — The composite vehicle's ADAS Central Module serves as the central decision-making hub: it receives sensor inputs, runs ADAS algorithms, and issues commands to output modules. It does not directly drive actuators, host warning chimes, or serve as a Gateway backup — those roles belong to their respective modules.

18. C — Technician B is correct. A passed bidirectional self-test confirms basic module-internal function but does not verify calibration parameters or downstream pathway integrity. Real-world failures after passed self-tests require investigation beyond the module — calibration status, communication paths, and external conditions.

19. D — A voltage drop of 0.15V on a ground connection under load exceeds the typical 0.05V threshold for healthy grounds and warrants inspection or cleaning. This excessive resistance is not a healthy reading, not a completely open circuit, but it does indicate a condition that needs correction to restore reliable operation.

20. A — The composite vehicle specifies the steering wheel haptic feedback actuator coil resistance at 36 ohms with a tolerance of plus or minus 4 ohms (range 32–40 ohms). This reference-sourced specification is commonly tested and provides the diagnostic threshold for determining actuator health.

21. B — Checking OEM procedures for relearn requirements after battery disconnection is the productive first step. Battery disconnection causes various modules to lose learned data that must be re-established through specific initialization or relearn procedures — replacement, alignment, or reprogramming are premature responses.

22. D — Scan tool reporting calibration success while real-world performance is erratic is the classic signature of silent miscalibration. This typically results from unmet preconditions during the calibration — tire pressure, vehicle loading, floor slope, or target placement — that the scan tool cannot detect.

23. A — The composite vehicle specifies the forward radar module's maximum detection range at approximately 160 meters, suitable for highway-speed ACC and AEB applications. This specific value is reference-sourced and distinguishes the composite vehicle's radar from shorter-range corner radars and longer-range luxury-segment implementations.

24. C — Non-OEM bumper covers with non-OEM paint may not meet the radar transparency specification required for the 77 GHz band. The materials can attenuate signal and degrade detection performance, which is why OEM position statements typically specify OEM parts in radar zones across manufacturers.

25. B — When a customer asks about calibration after bumper replacement, explaining that bumper work disturbs radar mounting and calibration is required per OEM is the correct response. This educates the customer about why the procedure is needed while supporting the professional standard of care for the repair.

26. A — Enable criteria are the specific conditions a module must observe before running the diagnostic monitor for a given code. These conditions may involve voltage, speed, temperature, time elapsed, or combinations — understanding enable criteria explains why faults sometimes do not produce stored codes under specific test conditions.

27. B — Both vehicles displaying CAN-H rising to 3.5V and CAN-L falling to 1.5V during dominant bits shows normal healthy CAN bus differential signaling behavior. This is the expected waveform pattern across manufacturers, and this reading confirms proper bus operation on both vehicles consistently.

28. D — The composite vehicle's forward-facing camera supports lane departure warning, lane keep assistance, traffic sign recognition, and automatic high beam simultaneously. ACC and AEB rely on forward radar, while BSW and RCTA rely on corner radars — not the forward camera.

29. B — Reflective sunglass lenses can block or scatter the infrared imaging that driver monitoring systems use to observe the driver's face and eyes. The mirror coating interferes with the IR signal the camera relies on, producing false warnings — this is a known limitation of current infrared-based driver monitoring.

30. A — Exterior mirror housing replacement that contains a surround view camera requires subsequent calibration of that replaced camera per OEM procedure. The Surround View Module's image stitching depends on accurate camera positioning, and the replacement camera must be calibrated to the vehicle's reference frame.

31. C — The 76 to 81 GHz band, commonly called 77 GHz automotive radar, is the current industry standard across manufacturers. Higher frequency allows finer resolution with smaller antennas, which is why this band has become universal for both long-range and short-range automotive radar designs.

32. D — A radar calibration performed on an unlevel shop floor is silently miscalibrated despite scan tool success. The floor slope produces incorrect geometric reference that the scan tool cannot detect, and the customer experiences degraded ADAS performance that the shop caused by ignoring the precondition.

33. C — Silent miscalibration is defined as the scenario where the procedure completes successfully on the scan tool but produces degraded real-world performance. This typically results from unmet preconditions that the scan tool cannot detect, and it is the most documented failure mode of imperfectly executed ADAS calibration.

34. A — After programming and coding of a replacement corner radar, the next required steps are completing initialization per OEM procedure followed by calibration. This is the standard four-step workflow; skipping any step leaves the module incomplete regardless of how well the others were performed.

35. D — Corner radar modules on typical ADAS vehicles directly support blind spot warning and rear cross-traffic alert. These features share the corner radar hardware and its private CAN bus — ACC, LKA, TSR, HBA, and the other features have different sensor requirements and rely on other modules.

36. A — Erratic ACC on specific highway stretches 4 weeks after calibration warrants investigation into possible calibration drift, contamination, or mechanical disturbance since the last service. These factors can cause specific-condition symptoms without triggering hard DTCs, and targeted investigation is productive before module replacement.

37. B — The composite vehicle's forward radar communicates detected target data to the ADAS Central Module via the public ADAS CAN bus, not a dedicated private bus, hardwired connection, or cellular link. The ADAS Central Module then processes this data along with other sensor inputs before issuing ADAS commands.

38. D — OEM specifications typically limit shop floor slope to 1 degree total maximum across the calibration area. This specification reflects the geometric accuracy required for correct sensor calibration, and exceeding this limit produces silent miscalibration regardless of scan tool reports.

39. A — A forward radar consistently reporting target distances matching actual scene conditions indicates the radar is likely functioning correctly. If ADAS issues persist despite correct radar data, investigation should focus on downstream components — ADAS Central Module decision-making, output module response — rather than the correctly-functioning radar.

40. C — Corner radar CAN bus diagnosis begins with measuring bus resistance, observing waveforms with an oscilloscope, and verifying supply and ground connections. This systematic sequence reveals bus termination, signal integrity, and power-side conditions before any module replacement or speculative reprogramming is considered.

41. B — After radar calibration is complete, the correct verification sequence is a post-repair scan followed by operational road test of radar-dependent features. Scan verification confirms no new codes appeared; road testing confirms the ADAS features actually function during real-world driving — both are required.

42. C — The composite vehicle's ultrasonic sensors are mounted primarily in the front and rear bumper covers at multiple positions along each fascia. This mounting configuration provides a ring of short-range detection coverage around the vehicle's perimeter and is standard across modern OEM designs.

43. B — Ultrasonic sensors operate at frequencies above normal human hearing, typically 40 to 50 kHz. This ultrasonic frequency allows pulses that do not disturb occupants or pedestrians while providing adequate resolution for short-range distance measurement during parking operations.

44. A — Paint applied directly over an ultrasonic sensor's transducer face attenuates the ultrasonic signal and causes degraded or failed sensor operation. The paint physically impedes the sound energy the transducer must transmit and receive, which is why OEM procedures require sensor removal before any bumper cover painting.

45. D — Cold-weather-only parking sensor failures with sensors clean in the warm shop strongly suggest ice or snow accumulation on the transducer faces during cold driving that melts before

shop arrival. This weather-correlated pattern is a documented environmental interaction, not hardware failure or a system limitation customers should accept.

46. B — An internally failed ultrasonic sensor with verified supply and ground is replaced individually, followed by scan tool verification of the new sensor's operation. No system-wide intervention is required — the fault is isolated to the one failed unit, and targeted replacement is the correct action.

47. A — The composite vehicle's Ultrasonic Control Module communicates aggregated sensor data to the ADAS Central Module over the public ADAS CAN bus, not a dedicated private bus, hardwired direct connection, or cellular connection. This is the standard ADAS communication architecture.

48. D — OEM procedures for bumper cover repainting on ADAS-equipped vehicles require ultrasonic sensor removal before painting and reinstallation after the paint has cured. This prevents paint from coating transducer faces and preserves the sensors' ability to function normally after cosmetic work is complete.

49. C — Water droplets on ultrasonic transducer faces can produce false echo returns temporarily during rain. The droplets reflect ultrasonic pulses back to the sensor, creating the illusion of nearby obstacles. This is a known environmental interaction that resolves as the sensor faces dry, not a hardware failure.

50. D — After any ADAS repair, verification requires both a post-repair scan and an operational road test of the repaired features. Scan tool verification confirms module state and absence of new codes; road testing confirms real-world function — both are required for complete professional ADAS service.