PRACTICE EXAM 21

1. A customer reports their lane-centering and adaptive cruise both quit working at the same time after a minor front-end repair. This simultaneous loss most strongly suggests a problem with a:

A. Shared input or bus segment that both features depend on to operate

B. Single ultrasonic sensor located in the rear bumper cover assembly

C. Burned-out bulb in the instrument cluster warning lamp circuit only

D. Cabin air filter that has become restricted and needs replacement soon

2. A technician wants to confirm a suspected high-resistance ground on an ADAS module without removing the module. The most direct test is to:

A. Replace the module's ground wire entirely and recheck system operation

B. Disconnect the battery overnight and observe whether the fault clears

C. Visually inspect the paint color around the ground bolt mounting point

D. Measure voltage drop across the ground path while the circuit is loaded

3. A vehicle's forward-collision system uses both radar and camera data. The benefit of fusing these two sensor types is that it:

A. Eliminates the need to ever calibrate either sensor after a repair

B. Allows the system to run entirely without any vehicle speed input

C. Improves detection reliability by cross-checking two independent sources

D. Reduces the number of data bus wires required to connect the modules

4. During an ADAS pre-scan, the technician finds DTCs in several unrelated modules along with the ADAS faults. The most disciplined approach is to:

A. Clear all codes immediately and release the vehicle to the customer

B. Replace each module that shows any stored code without further testing

C. Address only the ADAS codes and ignore the other module faults entirely

D. Document all codes and diagnose them in a logical, prioritized order

5. A driver complains the automatic emergency braking activated for no visible reason on an open road. After confirming no DTCs, the technician should first consider whether the radar:

A. Lost all communication with the gateway during the braking event itself

B. Detected a reflection or misread a target due to an aim or mounting issue

C. Had its supply fuse open momentarily during the false activation event

D. Was disconnected entirely, which would disable the braking function fully

6. A technician must interpret a wiring schematic showing a shielded twisted pair for an ADAS sensor. The shield's primary purpose is to:

A. Increase the signal voltage carried by the two twisted conductors inside

B. Protect the data signal from electromagnetic interference along the run

C. Provide a backup path if one of the twisted conductors breaks open

D. Supply switched power to the sensor whenever the ignition is turned on

7. A customer states the blind-spot warning illuminates constantly on one side, even with no traffic present. The technician should first inspect the affected sensor for:

A. Obstruction, damage, or excess body filler over its mounting location

B. An incorrect software version compared to the opposite-side sensor unit

C. A blown fuse shared with the entire vehicle lighting circuit network

D. Low system supply voltage measured at the forward radar connector pin

8. Bi-directional control of an ADAS actuator during diagnosis allows the technician to confirm:

A. The module's internal calibration file is the newest available version

B. That a post-repair scan is no longer needed after the test is complete

C. Whether the component responds correctly to a commanded operation

D. The exact labor time the manufacturer assigns to the repair procedure

9. A scan tool shows an ADAS module reporting an implausible wheel-speed value that disagrees with the other three wheels. This single-wheel discrepancy points the technician toward:

A. A fault in that wheel's speed sensor or its circuit specifically

B. A complete failure of the entire high-speed CAN communication bus

C. A discharged vehicle battery unable to power any of the modules

D. A misaligned forward camera reading the wrong lane position data

10. A technician researching an ADAS concern needs to know the enable criteria for a specific DTC. Knowing these criteria tells the technician:

A. The exact replacement part number for the module that set the code

B. The labor operation code required to bill the diagnostic time correctly

C. The torque specification for the sensor's mounting bracket fasteners

D. The conditions that must exist for the module to set or clear that code

11. A vehicle with adaptive headlights and ADAS shares steering angle data between the two systems. If the steering angle signal is faulty, the technician should expect symptoms in:

A. Only the tire pressure monitoring system on that particular vehicle

B. Only the rear ultrasonic park-assist sensors during low-speed maneuvers

C. Both the adaptive headlights and steering-dependent ADAS functions

D. Only the cabin climate control blower motor speed during operation

12. A technician must verify that an ADAS calibration target is mounted plumb and square to the vehicle. The appropriate combination of tools is a:

A. Scan tool and a low-amp current clamp connected to the sensor supply

B. Voltmeter and an oscilloscope monitoring the sensor's data bus signals

C. Refractometer and a cooling system pressure tester for the procedure

D. Level, square, and plumb bob referenced to the vehicle's centerline

13. A customer concern of intermittent ADAS dropout that worsens in wet weather most strongly directs the technician to inspect for:

A. An outdated calibration file that should be reflashed at the next visit

B. Water intrusion or corrosion in a connector that degrades when wet

C. A permanently failed module requiring immediate full replacement now

D. Normal behavior, since ADAS is designed to shut off in any rainfall

14. A technician removes and replaces an ADAS control module. Before the system will function, the module must be configured so that it:

A. Recognizes the vehicle's options and operates with the correct parameters

B. Raises the supply voltage delivered to the radar sensor heating element

C. Physically aligns the camera's optical axis to the centerline automatically

D. Eliminates any need for a subsequent static or dynamic calibration step

15. A waveform on an ADAS sensor's signal circuit shows clean pulses that suddenly drop out each time the vehicle is shaken by hand. This vibration-sensitive pattern indicates:

A. A normal signal that the sensor produces only during actual driving

B. A software fault inside the module requiring a complete reflash event

C. A correctly functioning circuit verified by the dropout during shaking

D. An intermittent open or loose connection somewhere in that circuit

16. A technician must determine whether body damage near a radar sensor is within repairable limits. The repairability decision is governed by the:

A. Manufacturer's specifications and tolerances for that structural area

B. Total mileage accumulated on the vehicle since its original in-service date

C. Brand of the body filler the previous repairer chose to use on the panel

D. Ambient shop temperature recorded on the day of the damage inspection

17. A customer says their ADAS features work normally except immediately after a cold start, when warnings briefly appear. The technician should recognize this may be:

A. Normal system initialization as sensors warm up and complete self-checks

B. A sign that the forward radar sensor has completely failed internally

C. Proof the camera lost its static calibration during the previous repair

D. Evidence the ultrasonic sensors were never reconnected after a repair

18. When researching a vehicle's ADAS configuration, the technician should verify installed options directly rather than rely solely on the build sheet because:

A. Build sheets always list more options than the vehicle actually contains

B. Vehicles may carry equipment that the build sheet does not accurately reflect

C. The build sheet determines the labor rate charged for the repair work

D. Option codes have no relationship to the systems installed on the vehicle

19. A customer reports the lane-departure warning works in the daytime but gives random alerts at dusk. The technician researching this should focus on the camera's:

A. Mounting bracket torque value compared to the published specification

B. Performance limits and enable criteria under reduced-light conditions

C. Data bus termination resistance measured at the gateway connector pins

D. Supply fuse amperage compared to the forward radar sensor's fuse rating

20. A forward camera is replaced but lane-keeping does not function even after a successful calibration. The technician should verify the camera was:

A. Cleaned with an approved lens solution before the glass was reinstalled

B. Shipped from a distribution center within the same regional service zone

C. Programmed and configured to the vehicle in addition to being calibrated

D. Torqued to a value higher than specification to ensure a secure mount

21. A camera's data stream shows a yaw rate value that conflicts with the steering angle input. This conflict would most directly degrade the camera's ability to:

A. Heat the windshield glass directly in front of the camera lens housing

B. Project the head-up display image at the correct windshield brightness

C. Correctly interpret the vehicle's path for lane-keeping interventions

D. Communicate with the rear park-assist ultrasonic controller module

22. A camera calibration target must match the specified pattern and contrast. Using a faded or low-contrast printed target would most likely cause:

A. A short circuit between the camera's supply and ground inside the case

B. An increase in the rear ultrasonic sensor's maximum detection distance

C. A complete loss of communication across the entire ADAS data network

D. The camera to fail to recognize the target, aborting the calibration

23. A technician finds a camera calibration repeatedly fails only when sunlight streams directly into the bay through a window. This points to:

A. A faulty camera module requiring immediate replacement before retrying

B. A low battery condition that only occurs during daylight hours of operation

C. Environmental light interference that must be controlled per specification

D. A software mismatch between the camera and the gateway control module

24. A camera reports it is "blocked" yet the lens is visibly clean. Researching the enable criteria, the technician should determine:

A. The replacement part number so a new camera can be ordered promptly

B. The conditions the module uses to declare a blocked state, then test them

C. The labor time the manufacturer allows for replacing the camera module

D. The torque specification for the camera bracket retaining screws first

25. A vehicle with a camera-based system was in a collision repaired at another shop. The lane-keeping now pulls slightly to one side. The technician should suspect:

A. The ultrasonic sensors were calibrated incorrectly during the prior repair

B. A camera aim or mounting error introduced during the previous structural work

C. The forward radar's heater element failed sometime after the repair was done

D. The driver monitoring camera was set to the wrong sensitivity level setting

26. A camera calibration completes in the bay, but the technician must still confirm real-world function. The required final step is to:

A. Road test the vehicle per manufacturer procedure to verify operation

B. Clear all stored codes and release the vehicle without any road testing

C. Replace the windshield again to rule out any optical distortion present

D. Reduce the camera bracket torque to relieve stress on the windshield glass

27. A technician must identify the components and locations of an unfamiliar camera system. The authoritative first resource is the:

A. Manufacturer's service information describing the system layout and parts

B. Anonymous online forum thread written by an owner of a similar vehicle

C. Casting numbers stamped on the discarded camera's metal mounting plate

D. Owner's manual section explaining how the lane systems behave when driving

28. A camera with a cracked but still-attached mounting bracket passes a static calibration. The technician should recognize that:

A. The crack is irrelevant because the static calibration completed successfully

B. The crack may allow the lens to shift later, so the bracket needs attention

C. The camera must be replaced immediately regardless of the bracket condition

D. The static calibration alone fully guarantees long-term aim stability now

29. A customer reports the forward-collision warning is overly sensitive, alerting at safe following distances. After confirming no DTCs, the technician should investigate whether the camera's:

A. Windshield washer nozzle is aimed away from the lens during operation

B. Supply fuse is rated higher than the radar sensor's protective fuse

C. Cabin air filter restriction has reached its scheduled replacement point

D. Aim or calibration is off, causing it to misjudge distances to objects

30. After completing all camera-related repairs and calibration, the documentation step required before customer release is to:

A. Reset the oil life monitor to one hundred percent of remaining life

B. Record the customer's preferred climate settings for their next visit

C. Perform a post-repair scan confirming no related DTCs remain stored

D. Top off the windshield washer reservoir with approved winter solution

31. (Refer to ADAS Composite Vehicle Type 1.) A customer reports adaptive cruise is completely inoperative, and the scan tool cannot reach the forward radar module while all others respond. The fault most likely lies in the:

A. Shared battery feed common to every ADAS module on the vehicle

B. Gateway module, which would disable all bus communication at once

C. Driver monitoring camera, which uses a separate private data line

D. Circuit or connector serving the forward radar module specifically

32. A radar sensor's specified mounting-angle tolerance is very tight. A technician should understand that a small angular mounting error will:

A. Change the data bus baud rate the radar uses to transmit its messages

B. Cause a large lateral position error at the radar's maximum detection range

C. Increase the supply voltage the radar draws from the vehicle's battery

D. Lower the resistance of the radar sensor's internal heating element circuit

33. A static radar calibration requires a clear, reflection-free space ahead of the vehicle. The reason this matters is that stray reflections can:

A. Lower the 12-volt supply voltage reaching the radar during the procedure

B. Increase the resistance of the radar sensor's internal heating element

C. Return false signals that corrupt the radar's calibration reference data

D. Erase the stored DTCs from the gateway module before calibration begins

34. (Refer to ADAS Composite Vehicle Type 1.) With the ADAS central module unplugged, a DMM across the ADAS-CAN pair reads about 120 Ω. This expected reading indicates the:

A. Bus has a dead short between its two conductors in the harness wiring

B. Bus has a complete open isolating one module from the rest of the network

C. Bus termination is intact and the measured circuit is configured normally

D. Battery is fully discharged and cannot supply the measurement current

35. A radar sensor behind a bumper cover that received excessive filler now detects targets late. The mechanism is that excessive filler:

A. Attenuates and delays the radar signal passing through the cover material

B. Raises the sensor's supply voltage above its rated operating maximum value

C. Changes the vehicle's CAN bus baud rate during message transmission

D. Forces the ultrasonic sensors to share the radar's data bus bandwidth

36. A customer says their adaptive cruise brakes harder than expected when approaching slower traffic. After confirming no DTCs, the technician should investigate whether the radar:

A. Lost communication with the gateway during each braking event itself

B. Had its supply fuse open momentarily during the hard braking event

C. Is aimed or mounted incorrectly, causing it to misjudge closing distance

D. Was disconnected entirely, which would disable braking altogether

37. Technician A says a bent radar bracket can cause aim error even after calibration completes. Technician B says correct ride height is required for radar calibration. Who is correct?

A. A only

B. B only

C. Neither A nor B

D. Both A and B

38. (Refer to ADAS Composite Vehicle Type 1.) A technician needs the forward radar's maximum detection range to evaluate a late-braking concern. The correct source for this specification is the:

A. Composite vehicle reference, which lists the radar's range specification

B. Estimating software's labor guide entry for the front bumper assembly

C. Aftermarket catalog listing for the radar sensor's replacement part number

D. Shop foreman's experience with similar radar systems on other brands

39. A radar function drops out only when the vehicle crosses rough railroad tracks. This vibration-linked pattern points the technician toward:

A. An outdated calibration file that needs a reflash at the next service visit

B. A permanently failed radar sensor requiring immediate full replacement

C. Normal operation, since radar is designed to mute over railroad crossings

D. A loose connector or mount that breaks contact under road vibration

40. A radar sensor connector shows green corrosion on several terminals. The most appropriate corrective action is to:

A. Apply additional body filler around the connector to seal out future moisture

B. Increase the system supply voltage to overcome the added contact resistance

C. Clear the stored codes and release the vehicle, since corrosion is cosmetic

D. Repair or replace the affected terminals and connector to restore the circuit

41. A radar calibration aborts indoors despite correct target setup. The technician suspects environmental interference. Which finding best supports that conclusion?

A. A 1.5 V drop measured across the radar sensor's main ground connection

B. A target printed in a gray shade slightly off the specified value

C. A metal parts cart and a vehicle lift positioned within the radar's field

D. A camera software version one revision behind the radar module's version

42. A radar-based system gives false rear cross-traffic alerts in a parking lot full of metal vehicles. The technician should recognize this behavior as:

A. A definite radar sensor failure requiring immediate replacement of the unit

B. A wiring short in the radar's supply circuit triggered by the environment

C. A loss of communication between the radar and the gateway control module

D. Possibly normal, as surrounding metal objects can produce real returns

43. A radar sensor's aim is verified during calibration relative to the vehicle's thrust line. The thrust line is established by the vehicle's:

A. Front bumper distance measured to the calibration target stand base

B. Rear axle geometry, which defines the direction the vehicle actually tracks

C. Steering wheel held straight throughout the calibration procedure

D. Forward camera optical axis projected onto the calibration bay floor

44. A radar sensor is replaced and calibration completes, but a road test shows the ACC reacting to vehicles in adjacent lanes. The technician should suspect:

A. The new radar was shipped from the wrong regional distribution center first

B. The battery voltage was marginal during the static calibration phase earlier

C. A residual aim or mounting error skewing the radar's lateral detection field

D. The ultrasonic sensors were left disconnected during the road test drive

45. After a radar repair, a manufacturer-specified road test confirms the ACC holds proper following distance. This road test primarily verifies that the:

A. Battery fully recharged after the static calibration procedure was completed

B. System performs correctly under actual real-world driving conditions

C. Tire pressure monitor relearned all four sensors during the test drive

D. Engine reached full operating temperature before the codes were cleared

46. A customer reports the rear park-assist gives false warnings during a car wash. The technician should recognize this is most likely caused by:

A. Water and spray on the sensor faces producing false echo returns

B. The forward radar seizing control of the ultrasonic system's data bus

C. The lane-keeping camera losing its calibration during the wash cycle

D. The driver monitoring system muting itself under a normal condition

47. A single ultrasonic sensor reads erratically while the rest function normally. The most efficient first inspection is to check that sensor's:

A. Face and connector for obstruction, physical damage, or a loose contact

B. Software revision against the park-assist controller's current version number

C. Contribution to the data bus termination resistance at the gateway module

D. Supply voltage compared with the forward radar sensor's supply voltage

48. (Refer to ADAS Composite Vehicle Type 1.) A technician needs the detection range and pattern of the rear ultrasonic sensors. The authoritative source is the:

A. Resistance measured directly across each sensor's two connector terminals

B. Composite vehicle reference document describing the ultrasonic system specs

C. Forward radar's published range specification scaled down for the rear sensors

D. Vehicle wheelbase printed on the certification label inside the door jamb area

49. A bumper was refinished and the ultrasonic sensors received several coats of paint. The sensors now misbehave because the added paint:

A. Reverted each sensor's internal firmware to an earlier factory software version

B. Lowered the vehicle's data bus speed when the bumper was removed for paint

C. Caused the radar module to seize exclusive control of the shared data bus

D. Dampens the ultrasonic waves the sensors must emit and receive cleanly

50. After replacing a damaged ultrasonic sensor and clearing codes, the technician confirms the repair by:

A. Reprogramming the forward radar module to recognize the new sensor hardware

B. Raising the park-assist chime volume to its maximum available output level

C. Performing a functional test and post-repair scan of the park-assist system

D. Replacing the remaining original sensors so the complete set matches exactly

Answer Key & Full Answer Explanations

1. A — Two features quitting together points to a shared input or bus segment both depend on. When independent systems fail simultaneously, the common element is the likely cause. A single rear sensor, one warning bulb, or a cabin filter would not disable both functions at once.

2. D — Measuring voltage drop across the ground path while the circuit is loaded directly reveals high resistance without removing the module. Drop testing under load is the definitive method for ground integrity. Replacing the wire, disconnecting overnight, or inspecting paint color does not quantify the resistance.

3. C — Fusing radar and camera data improves detection reliability by cross-checking two independent sources. Each sensor compensates for the other's weaknesses. Fusion does not eliminate calibration, remove the need for speed input, or reduce bus wiring.

4. D — The disciplined approach is to document all codes and diagnose them in a logical, prioritized order. Unrelated faults can influence ADAS behavior and must be understood. Clearing everything, replacing modules blindly, or ignoring non-ADAS codes risks missing the root cause.

5. B — Unexplained AEB activation with no DTCs first calls for considering whether the radar detected a reflection or misread a target due to an aim or mounting issue. A skewed beam perceives phantom targets. Total communication loss, a momentary open fuse, or full disconnection would disable braking, not cause false activation.

6. B — The shield on a twisted pair protects the data signal from electromagnetic interference along the run. Shielding preserves signal integrity on sensitive ADAS circuits. It does not boost voltage, serve as a backup conductor, or supply power.

7. A — A blind-spot warning stuck on with no traffic calls for first inspecting the affected sensor for obstruction, damage, or excess body filler over its location. A blocked or buried sensor produces false returns. Software version, a shared lighting fuse, and radar supply voltage are not the first, most likely cause.

8. C — Bi-directional control confirms whether the component responds correctly to a commanded operation. It actively verifies function rather than waiting for the fault. It does not reveal calibration version, replace a post-repair scan, or show labor time.

9. A — A single wheel reporting an implausible speed points to a fault in that wheel's speed sensor or its circuit specifically. The discrepancy is localized to one wheel. A total bus failure, dead battery, or misaligned camera would not isolate to one wheel-speed value.

10. D — Enable criteria tell the technician the conditions that must exist for the module to set or clear that code. Knowing them reveals what the module was monitoring. They are not a part number, a labor code, or a torque spec.

11. C — Faulty steering angle data shared between adaptive headlights and ADAS produces symptoms in both the headlights and steering-dependent ADAS functions. Both systems rely on the same signal. TPMS, ultrasonic park-assist, and climate control do not use steering angle.

12. D — A level, square, and plumb bob referenced to the vehicle's centerline verify a target is mounted plumb and square. These tools establish accurate geometry. A scan tool, voltmeter, oscilloscope, refractometer, or pressure tester measure unrelated quantities.

13. B — Intermittent dropout that worsens in wet weather directs the technician to water intrusion or corrosion in a connector that degrades when wet. Moisture expands a marginal connection's effect. A calibration file, a fully failed module, or "designed rain shutoff" do not track wet conditions.

14. A — A replaced control module must be configured so it recognizes the vehicle's options and operates with correct parameters. Without configuration it lacks the right settings to function. Configuration does not raise voltage, auto-align the camera, or eliminate calibration.

15. D — Clean pulses that drop out when the vehicle is shaken indicate an intermittent open or loose connection in that circuit. Mechanical disturbance reveals the marginal contact. This is not a normal driving-only signal, a software fault, or correct operation.

16. A — Repairability near a radar sensor is governed by the manufacturer's specifications and tolerances for that structural area. Sensor-bearing zones have tight limits because deformation shifts aim. Mileage, filler brand, and shop temperature do not determine repairability.

17. A — Brief warnings only after a cold start may be normal system initialization as sensors warm up and complete self-checks. Some systems display transient messages during startup. A failed radar, lost calibration, or disconnected sensors would produce persistent faults, not brief startup messages.

18. B — Installed options must be verified directly because vehicles may carry equipment the build sheet does not accurately reflect. Paperwork can omit later-added or substituted equipment. Build sheets do not always overlist, set labor rates, or lack any relationship to installed systems.

19. B — Random dusk alerts call for focusing on the camera's performance limits and enable criteria under reduced-light conditions. Vision systems behave differently as light fades. Bracket torque, bus termination, and fuse rating do not explain a light-dependent symptom.

20. C — A replacement camera that fails after a successful calibration must be confirmed programmed and configured to the vehicle, not merely calibrated. Configuration loads the correct parameters the module needs. Lens cleaning, shipping origin, and over-torquing do not make it operational.

21. C — A yaw rate conflicting with steering angle most directly degrades the camera's ability to correctly interpret the vehicle's path for lane-keeping. Lane logic fuses these inputs. The conflict does not affect windshield heating, HUD brightness, or ultrasonic communication.

22. D — A faded or low-contrast target causes the camera to fail to recognize the target, aborting the calibration. The camera needs the specified pattern and contrast to read its reference. A bad target does not create a short, change ultrasonic range, or kill the bus.

23. C — A calibration failing only when direct sunlight enters the bay indicates environmental light interference that must be controlled per specification. Excess or uneven light corrupts the camera's reference. It is not a faulty module, a daylight-only battery condition, or a software mismatch.

24. B — A "blocked" report with a clean lens calls for determining the conditions the module uses to declare a blocked state, then testing them. The trigger lies elsewhere, such as a threshold or input. Ordering a camera, checking labor time, or reading bracket torque skips the diagnosis.

25. B — Lane-keeping pulling to one side after collision repair elsewhere suggests a camera aim or mounting error introduced during the previous structural work. Structural changes shift the camera's reference. Ultrasonic calibration, a radar heater, and driver-monitor sensitivity do not cause a lane-keeping pull.

26. A — After bay calibration, the required final step is to road test per manufacturer procedure to verify operation. On-road performance is the proof of repair. Clearing codes without testing, re-replacing glass, or reducing bracket torque does not verify function.

27. A — The manufacturer's service information describing system layout and parts is the authoritative first resource for an unfamiliar camera system. It is reliable and model-specific. Forums, casting numbers, and the owner's manual do not map system architecture.

28. B — A cracked but attached bracket that passes static calibration still needs attention, because the crack may allow the lens to shift later. Calibration captures only the present aim, not future stability. The crack is not irrelevant, does not mandate immediate camera replacement, and a passing static result does not guarantee lasting aim.

29. D — Over-sensitive forward-collision warnings with no DTCs call for investigating whether the camera's aim or calibration is off, causing it to misjudge distances. A skewed reference misreads following distance. A washer nozzle, fuse rating, and cabin filter do not affect detection distance.

30. C — The documentation step before release is a post-repair scan confirming no related DTCs remain. It proves the camera system is functioning. Resetting oil life, recording climate settings, and topping off washer fluid do not verify the repair.

31. D — When only the forward radar is unreachable while all others respond, the fault lies in the circuit or connector serving that module specifically. A shared battery or gateway fault would disable many modules. Isolating the loss to one node points to its individual wiring.

32. B — A tight mounting-angle tolerance matters because a small angular error causes a large lateral position error at the radar's maximum range. The error compounds over distance. The angle does not change baud rate, supply voltage, or heater resistance.

33. C — Stray reflections during static radar calibration return false signals that corrupt the calibration reference data. The radar cannot separate clutter from its intended target. Reflections do not lower supply voltage, change heater resistance, or erase codes.

34. C — A 120 Ω reading across the ADAS-CAN pair indicates the bus termination is intact and the circuit is configured normally. That nominal value reflects healthy termination. A short reads near zero, an open reads infinite, and a dead battery would not produce this reading.

35. A — Late radar detection behind heavy filler is caused by filler that attenuates and delays the radar signal passing through the cover. Radar must penetrate within strict thickness limits. It does not raise supply voltage, change baud rate, or force bus sharing.

36. C — ACC braking harder than expected with no DTCs calls for investigating whether the radar is aimed or mounted incorrectly, causing it to misjudge closing distance. A skewed beam misreads range and timing. Lost communication, a momentary open fuse, or full disconnection would disable braking, not cause aggressive braking.

37. D — Both technicians are correct: a bent bracket can cause aim error even after calibration completes, and correct ride height is required for radar calibration. Both statements reflect valid calibration principles. Neither is wrong.

38. A — The composite vehicle reference, which lists the radar's range specification, is the correct source for the forward radar's maximum detection range. It is authoritative for composite-vehicle data. Labor guides, catalogs, and other-brand experience do not supply this spec.

39. D — A radar dropout only over rough railroad tracks points to a loose connector or mount that breaks contact under road vibration. Mechanical disturbance reveals the marginal connection. A calibration file, a fully failed sensor, or "designed muting" would not track vibration.

40. D — Corroded terminals must be repaired or replaced to restore the circuit. Corrosion adds resistance and causes intermittent or lost signals. Sealing with filler, raising voltage, or releasing the vehicle fails to fix the connection.

41. C — A metal parts cart and a vehicle lift within the radar's field are genuine environmental interference aborting an indoor calibration. Reflective surfaces return false signals. A ground drop, target shade, or software revision are not environmental interference.

42. D — False rear cross-traffic alerts in a lot full of metal vehicles may be normal, as surrounding metal objects can produce real returns. The radar is detecting actual reflective objects. This does not by itself prove sensor failure, a wiring short, or lost communication.

43. B — The thrust line is established by the vehicle's rear axle geometry, which defines the direction the vehicle actually tracks. Radar aim references this true tracking direction. Bumper distance, steering position, and camera axis do not define the thrust line.

44. C — A new radar reacting to adjacent-lane vehicles after calibration suggests a residual aim or mounting error skewing lateral detection. The beam points slightly off, widening coverage. Shipping origin, marginal battery, and disconnected ultrasonic sensors do not explain lateral misdetection.

45. B — The manufacturer-specified road test verifies the system performs correctly under actual real-world driving conditions. On-road behavior is the final proof of repair. It does not confirm battery recharge, TPMS relearn, or engine temperature.

46. A — False park-assist warnings during a car wash are most likely caused by water and spray on the sensor faces producing false echo returns. Water disrupts the ultrasonic signal. The radar seizing the bus, camera calibration loss, and driver-monitor muting do not explain wash-time false alerts.

47. A — One erratic sensor among healthy ones is most efficiently diagnosed by checking that sensor's face and connector for obstruction, damage, or a loose contact. The fault is localized to that unit. Software revision, bus termination, and radar supply voltage are system-wide factors.

48. B — The composite vehicle reference document describing the ultrasonic system specs is the authoritative source for the rear sensors' range and pattern. It is the defined reference for composite-vehicle data. Terminal resistance, scaled radar specs, and wheelbase do not provide this.

49. D — Sensors painted with several coats misbehave because the added paint dampens the ultrasonic waves they must emit and receive cleanly. Excess coating blocks the sound energy. Paint does not revert firmware, lower bus speed, or hand control to the radar.

50. C — The repair is confirmed by performing a functional test and post-repair scan of the park-assist system. This verifies both real detection and clean communication. Reprogramming the radar, raising chime volume, or replacing good sensors is unnecessary.