PRACTICE EXAM 16

1. A steering angle sensor was replaced as part of a steering rack job on a vehicle with lane-centering. Before release, the technician must determine whether the work requires a:

A. Steering angle sensor calibration so ADAS receives a correct zero reference

B. Complete replacement of the forward radar sensor behind the front grille

C. Reflash of the infotainment head unit to restore the navigation map data

D. Reset of the tire pressure monitoring system to relearn all four sensors

2. A technician measures 0.4 V drop across a single ADAS power feed connector under load. Compared with a typical acceptable limit, this reading is:

A. Well within tolerance, confirming the supply circuit needs no attention

B. Exactly at the published battery terminal voltage for a healthy system

C. A normal continuity value indicating the ground side is fully intact

D. Above the usual limit for one connector, indicating excess resistance

3. The ADAS modules on a vehicle rely on a vehicle-speed signal. This input most commonly originates from the:

A. Cabin air temperature sensor mounted near the climate control head

B. Wheel speed sensors processed through the brake control module

C. Fuel level sender float arm positioned inside the fuel tank assembly

D. Outside ambient light sensor located on the top of the dash panel

4. A technician must select a tool to verify a level calibration surface to a fraction of a degree. The most appropriate instrument is a:

A. Standard carpenter's bubble level read by eye from a few feet away

B. Tape measure stretched diagonally across the calibration bay floor

C. Digital inclinometer capable of reading slope to tenths of a degree

D. Plumb bob suspended from the ceiling above the target stand base

5. A scan tool displays a steering angle reading of 4 degrees while the vehicle is parked with the wheel held perfectly straight. The correct interpretation is that the:

A. Sensor needs a zero-point calibration to align its reference with center

B. Front radar sensor has lost its static calibration reference completely

C. Vehicle's wheel alignment requires a full four-wheel adjustment first

D. Driver monitoring camera is reading the wrong head position angle

6. A technician checks a CAN bus termination resistance and reads 120 Ω across the pair with the system unpowered. This single reading suggests:

A. A dead short between the two conductors somewhere in the harness

B. A complete open in one branch, isolating a module from the network

C. Only one termination resistor remains, with the other fully missing

D. Both terminators are present, since two 120 Ω resistors read 60 Ω in parallel

7. Before condemning a module for a no-communication fault, the most basic check the technician should perform is verifying the module's:

A. Power and ground supply integrity at the harness connector under load

B. Lens cleanliness against the inside surface of the front windshield glass

C. Mounting bracket torque compared to the published factory specification

D. Position relative to the vehicle thrust line measured with a tape rule

8. A LiDAR-equipped vehicle reports reduced detection range in heavy fog. The technician researching this should recognize that this behavior is:

A. An inherent limitation of LiDAR, which scatters in dense airborne moisture

B. Always caused by a failed LiDAR emitter requiring immediate replacement

C. A sign the forward radar has seized control of the LiDAR data bus segment

D. Proof the ultrasonic sensors were never reconnected after the last repair

9. A technician must determine whether a damaged radar mounting bracket is repairable or must be replaced. The deciding authority is the:

A. Aftermarket parts supplier's general catalog photograph of the component

B. Estimating software's default labor time assigned to that bumper assembly

C. Shop foreman's recollection of how a similar bracket was handled before

D. Manufacturer's repair information specifying tolerances for that bracket

10. A GPS-dependent ADAS feature behaves erratically in an urban area with tall buildings. The most likely explanation the technician should recognize is:

A. The forward camera lens fogged from a sudden change in cabin humidity

B. The radar sensor's heater element failed during the cold morning start

C. Multipath signal reflection degraded GPS accuracy among the structures

D. The ultrasonic sensors exceeded their maximum rated detection distance

11. Freeze-frame data stored with an ADAS DTC is most valuable because it records:

A. The operating conditions present at the exact moment the code set

B. A complete list of every other module installed on the vehicle network

C. The remaining service life of the camera's internal image processor

D. The manufacturer's recommended labor time to complete the repair

12. A technician needs to confirm the actual current draw of an ADAS module suspected of an internal short. The correct measurement approach is to use a:

A. Low-amp current clamp around the module's supply wire while it operates

B. Voltmeter connected across the windshield heater grid near the camera

C. Tape measure to verify the module's distance from the vehicle centerline

D. Plumb bob to confirm the module is mounted perfectly vertical and level

13. When researching ADAS intersystem design, the technician learns the active suspension can change ride height on demand. The significance for calibration is that:

A. The suspension must be removed entirely before any sensor calibration

B. Ride height has no effect on radar or camera aim during calibration

C. The vehicle must be at the manufacturer-specified height during the procedure

D. Calibration can proceed at any height as long as the battery stays charged

14. A vehicle's ADAS uses a yaw rate sensor. This sensor provides data describing the vehicle's:

A. Forward road speed derived from the rotating front wheel assemblies

B. Outside ambient air temperature used by the climate control system

C. Rotation about its vertical axis during cornering and stability events

D. Steering wheel angular position relative to the straight-ahead center

15. During a pre-scan, a technician finds a U-code indicating lost communication with the radar module. A U-code specifically points the diagnosis toward:

A. A network communication or bus-related fault between control modules

B. An internal mechanical failure of the radar sensor's printed circuit board

C. A body lighting circuit unrelated to the data communication network

D. A powertrain fueling concern affecting engine operation at idle speed

16. A technician must verify a target is positioned at exactly the specified distance from the sensor. The most accurate method described is to:

A. Estimate the distance by counting standard floor tile widths across the bay

B. Use a calibrated tape measure or laser referenced to the specified datum point

C. Position the target by eye until it appears centered in the camera image

D. Place the target wherever the calibration bay layout is most convenient

17. A blind-spot radar's enable criteria require a minimum vehicle speed before activation. A technician unaware of this might wrongly conclude the system has failed when it:

A. Sets a U-code for lost communication while the vehicle sits parked

B. Triggers a false alert while the vehicle is driven at highway speed

C. Does not respond to passing objects while the vehicle is stationary

D. Illuminates the malfunction lamp during a normal cold engine start

18. A technician performing a static calibration must convert a 1.5 meter specification to standard units. The correct converted value is approximately:

A. 15 inches, slightly more than one foot from the reference datum point

B. 3.3 feet, just over one full meter measured from the datum point

C. 4.9 feet, just under five feet measured from the reference datum point

D. 9.8 feet, just under ten feet measured from the reference datum point

19. A forward camera calibration specification lists an ambient lighting minimum. Performing a static calibration below that level would most likely cause the camera to:

A. Draw excessive current and open its supply circuit protection fuse

B. Fail to resolve the target image clearly, aborting the calibration

C. Lose communication with the gateway module on the high-speed bus

D. Overheat its internal image processor and shut down for protection

20. A camera requires a specific target pattern at a measured height matching the camera's mounting height. If the target is set too low, the result is:

A. A short circuit between the camera supply and ground inside the module

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

C. A vertical aim error that causes an incorrect or failed calibration

D. A complete loss of communication across the entire ADAS data bus

21. A technician reviews a camera's data stream and notes the yaw rate input reads implausibly high while parked. This faulty input would most directly impair the camera's ability to:

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

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

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

D. Distinguish a true lane departure from normal straight-line driving

22. A camera lens shows a faint film after a recent detailing with a silicone dressing. The technician should recognize this film can:

A. Increase the camera's effective detection range beyond its rated limit

B. Improve image clarity by reducing glare from oncoming headlights

C. Recalibrate the camera automatically the next time the vehicle is driven

D. Distort or obscure the image, degrading detection and calibration

23. A multifunction camera passes a static calibration but fails the dynamic verification drive. The technician should recognize this most likely indicates:

A. The static target was the wrong physical size for the procedure used

B. A real-world condition or aim issue the static bay did not reveal

C. The battery fell below the minimum voltage during the static phase

D. The ultrasonic sensors interfered with the camera during the drive

24. A camera's mounting bracket is bonded to the windshield. When ordering replacement glass, the technician must ensure the new windshield:

A. Includes the correct camera bracket and any required optical features

B. Is tinted darker than original to reduce glare on the camera lens

C. Omits the bracket so the camera can be remounted lower for clarity

D. Uses a thicker laminate to dampen vibration reaching the camera

25. A camera system stores a code for "image sensor temperature high." Researching the enable criteria, the technician learns this code sets when:

A. The vehicle battery voltage drops below the camera's minimum threshold

B. The forward radar sensor loses its static calibration reference angle

C. The internal sensor temperature exceeds a defined operating limit

D. The ultrasonic park sensors detect an object closer than their minimum

26. After a structural repair near the A-pillar, a camera calibration fails repeatedly with correct target setup. The technician should suspect:

A. The repair altered the windshield or bracket geometry, shifting the aim

B. The calibration target was printed on the wrong color of background paper

C. The vehicle's battery was too discharged to complete the procedure run

D. The rear ultrasonic sensors were left connected during the calibration

27. A technician must determine the diagnostic procedure for a camera concern and whether available information is adequate to proceed. The proper resource is the:

A. General internet search engine result for the symptom description

B. Manufacturer's service information for that specific camera system

C. Parts supplier's universal installation sheet packaged with the camera

D. Owner's manual description of how the lane systems behave on the road

28. A camera reports "calibration not complete" after a dynamic drive on a poorly marked rural road. The most appropriate next action is to:

A. Replace the camera, since the failed drive confirms an internal defect

B. Disconnect the radar sensors and attempt the drive a second time

C. Lower the camera mounting bracket to improve its downward view angle

D. Repeat the drive on a route with clear markings meeting the specification

29. A camera's field of view is partially blocked by an aftermarket dash-mounted phone holder. The technician should recognize this obstruction will:

A. Improve the camera's low-light performance by shading the lens

B. Interfere with detection and must be removed before calibration

C. Have no effect because the camera looks only through the windshield

D. Increase the system's maximum forward detection range significantly

30. When verifying a completed camera repair, the technician confirms the lane-departure warning activates appropriately during a road test. This verifies:

A. That the camera will never require recalibration after future service

B. The system performs its intended function under real driving conditions

C. The rear ultrasonic park-assist sensors are properly calibrated as well

D. The head-up display wedge layer in the windshield is correctly oriented

31. (Refer to ADAS Composite Vehicle Type 1.) The forward radar reports a "blockage" fault on a clear, dry day with a clean bumper cover. Researching the enable criteria, the technician should next check whether:

A. The rear ultrasonic sensors are returning excessive proximity readings

B. The driver monitoring camera lens is obstructed by interior debris

C. The cabin air filter restriction has reached its replacement threshold

D. Excess paint, filler, or a hidden bracket is attenuating the radar signal

32. A radar sensor specification lists a mounting angle tolerance of plus or minus a fraction of a degree. The reason this tolerance is so tight is that small angular errors:

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

B. Translate into large position errors at the radar's far detection range

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

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

33. A static radar calibration uses a corner reflector or radar target at a precise location. If that target is placed slightly off the specified lateral position, the result is:

A. A short circuit between the radar's supply and ground inside the module

B. An automatic increase in the ultrasonic sensors' detection range value

C. An incorrect calibration that biases the radar's perceived target angle

D. A complete loss of communication across the entire vehicle data bus

34. (Refer to ADAS Composite Vehicle Type 1.) A technician measures 60 Ω across the ADAS-CAN pair at an unplugged module connector where 120 Ω is expected. This reading most likely indicates:

A. An open in one branch isolating a single module from the network

B. A normal, healthy bus with both termination resistors fully intact

C. A discharged battery unable to supply the measurement current flow

D. A short between the two CAN conductors somewhere in the harness

35. A radar's measured detection performance degrades only when the outside temperature drops near freezing. The technician should suspect:

A. The vehicle's GPS antenna lost its satellite lock in the cold weather

B. The forward camera's image processor throttled due to low temperature

C. The driver monitoring system disabled itself to conserve battery power

D. Moisture or ice forming on or near the sensor face affecting the signal

36. Technician A says a radar calibration target must be placed at the specified height. Technician B says it must be placed at the specified distance. Who is correct?

A. Both A and B

B. A only

C. B only

D. Neither A nor B

37. A radar sensor was struck and remounted using a bracket that is bent a few degrees. After calibration "completes," the ACC still misjudges distances. The most likely reason is:

A. The bent bracket exceeds the angular tolerance, biasing the radar aim

B. The data bus baud rate changed when the bracket was reinstalled once

C. The radar's firmware reverted to an older version during the impact

D. The ultrasonic sensors are sharing the radar's bus and causing delay

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

A. The estimating software's labor guide entry for the front bumper assembly

B. The general aftermarket catalog listing for the radar sensor part number

C. The shop foreman's experience with similar radar systems on other brands

D. The composite vehicle reference, which lists the radar's range specification

39. A radar calibration requires the vehicle's thrust line to be established first. The thrust line is determined by the vehicle's:

A. Distance from the front bumper to the calibration target stand base

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

C. Steering wheel position held straight during the calibration procedure

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

40. A radar sensor connector is found with one terminal pushed back and not fully seated. The most appropriate corrective action is to:

A. Apply additional sealant over the connector to hold the terminal in place

B. Raise the system supply voltage to overcome the poor terminal contact

C. Reseat or repair the terminal so it locks fully into the connector body

D. Clear the codes and release the vehicle since the terminal still touches

41. A radar-based ACC system maintains too great a following distance even on its closest setting. After confirming no DTCs, the technician should investigate whether the radar is:

A. Drawing reduced voltage because the head-up display is set too bright

B. Aimed or mounted in a way that biases its perceived range to targets

C. Sharing data bus bandwidth with a disconnected ultrasonic controller

D. Receiving tire size data from the cabin air temperature sensor input

42. A radar calibration tool requires the bay floor slope to be within a specified limit. A floor that exceeds this slope limit will:

A. Prevent the scan tool from establishing communication with the radar

B. Tilt the vehicle and the radar beam, producing an inaccurate calibration

C. Open the radar's supply fuse as soon as the sensor is first energized

D. Erase the vehicle's stored configuration from the gateway module memory

43. A radar function works normally except when the vehicle is heavily loaded with cargo and passengers. This load-dependent behavior most likely results from:

A. Rear-end squat changing the radar's aim angle beyond its tolerance

B. The cargo weight increasing the data bus baud rate during transmission

C. The added passengers drawing current away from the radar supply circuit

D. The radar firmware self-downgrading whenever the vehicle is fully loaded

44. After a radar replacement, calibration completes but a road test shows the system reacts to vehicles in adjacent lanes. The technician should suspect:

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

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

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

D. A residual aim or mounting error is skewing the radar's lateral detection

45. A radar repair is verified with a manufacturer-specified road test confirming the ACC maintains proper following distance. This road test primarily confirms:

A. The battery fully recharged after the static calibration was completed

B. The tire pressure monitor relearned all four sensors during the drive

C. The system performs correctly under actual real-world driving conditions

D. The engine reached full operating temperature before codes were cleared

46. An ultrasonic parking sensor's detection range specification is listed in the reference. A technician finds the rear sensors stop detecting objects well short of that specified range. The first thing to check is whether the sensor faces are:

A. Drawing excessive current from the park-assist controller power supply

B. Reading the wrong vehicle speed signal from the brake control module

C. Set to a lower sensitivity by an option the customer recently selected

D. Partially obstructed by dirt, ice, or residue reducing their effective range

47. Ultrasonic sensors detect objects by emitting sound waves and measuring the time for the echo to return. A sensor face coated with thick paint will:

A. Increase the measured echo time, making objects appear farther away

B. Dampen the emitted and returning waves, reducing detection reliability

C. Improve detection by focusing the sound waves into a tighter beam

D. Have no effect because ultrasonic waves pass through paint unimpeded

48. (Refer to ADAS Composite Vehicle Type 1.) A technician needs the operating characteristics of the rear ultrasonic sensors, including their detection pattern. The authoritative source is the:

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

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

C. Composite vehicle reference document describing the ultrasonic system

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

49. A single ultrasonic sensor produces erratic distance readings while the rest function normally. The most efficient first step is to inspect that sensor's:

A. Physical condition and connector for obstruction, damage, or looseness

B. Software version against every other ultrasonic sensor on the vehicle

C. Contribution to the bus termination resistance measured at the gateway

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

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

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

B. Reprogramming the forward radar module to recognize the new sensor unit

C. Raising the park-assist chime to its maximum volume output setting level

D. Replacing all remaining original sensors so the full set matches the new one

Answer Key & Full Answer Explanations

1. A — A replaced steering angle sensor must be calibrated so ADAS receives a correct zero reference for straight-ahead. Lane-centering and stability functions depend on an accurate center point. Skipping this leaves the system acting on a false steering position.

2. D — A 0.4 V drop across a single connector is above the usual limit and indicates excess resistance. Acceptable drop across one connection is typically a few hundredths to about a tenth of a volt. The elevated reading starves the module and must be corrected.

3. B — The vehicle-speed signal ADAS modules use most commonly originates from the wheel speed sensors processed through the brake control module. That module derives and broadcasts speed onto the network. Temperature, fuel level, and light sensors do not provide vehicle speed.

4. C — A digital inclinometer reading slope to tenths of a degree is appropriate for verifying a level calibration surface to a fraction of a degree. Precision calibration demands measured accuracy, not visual estimation. A bubble level, tape, or plumb bob cannot resolve fractional-degree slope reliably.

5. A — A 4-degree steering angle reading with the wheel held straight means the sensor needs a zero-point calibration to align its reference with center. The sensor's zero has drifted from true straight-ahead. This is a sensor reference issue, not a radar, alignment, or driver-camera problem.

6. D — Reading 120 Ω across the pair confirms both terminators are present, since two 120 Ω resistors in parallel read 60 Ω—so 120 Ω indicates one effective termination path measured with the bus configured as the system expects. A dead short reads near zero and a full open reads infinite. The healthy parallel-termination value is the diagnostic anchor.

7. A — The most basic check before condemning a module for no communication is verifying its power and ground supply integrity at the connector under load. Most apparent module failures are actually supply or communication faults feeding a good module. Confirming the basics first prevents needless replacement.

8. A — Reduced LiDAR range in heavy fog is an inherent limitation, because LiDAR light scatters in dense airborne moisture. This is expected physics, not a defect. It does not prove a failed emitter, a bus takeover, or disconnected ultrasonic sensors.

9. D — The manufacturer's repair information specifying tolerances for that bracket is the deciding authority on repairability. Sensor-bearing brackets have tight limits because deformation shifts aim. Catalog photos, labor guides, and recollection do not establish repair tolerances.

10. C — Erratic GPS-dependent behavior among tall buildings is caused by multipath signal reflection degrading GPS accuracy. Signals bounce off structures and confuse position fixes. A fogged camera, failed heater, or ultrasonic range limit would not produce location errors.

11. A — Freeze-frame data records the operating conditions present at the exact moment the code set. Those parameters let the technician reproduce and narrow the fault. It is not a module list, a service-life gauge, or a labor estimate.

12. A — A low-amp current clamp around the supply wire while the module operates correctly measures actual current draw and reveals an internal short. It reads current without breaking the circuit. A voltmeter on the heater grid, a tape measure, and a plumb bob measure unrelated quantities.

13. C — Because active suspension can change ride height, the vehicle must be at the manufacturer-specified height during calibration. Sensor aim references the vehicle's attitude, so height must be controlled. The suspension is not removed, and height absolutely affects aim.

14. C — A yaw rate sensor describes the vehicle's rotation about its vertical axis during cornering and stability events. This input feeds stability and ADAS path logic. It does not provide road speed, air temperature, or steering angle.

15. A — A U-code points the diagnosis toward a network communication or bus-related fault between modules. The "U" designation is the communication category. It is not an internal board failure, a body-lighting fault, or a fueling concern.

16. B — A calibrated tape measure or laser referenced to the specified datum point is the accurate method for setting target distance. Calibration geometry must be exact. Tile counting, eyeballing, and convenience placement introduce error.

17. C — A blind-spot radar with a minimum-speed enable criterion will not respond to passing objects while stationary, which a technician unaware of the criterion might mistake for failure. The system is operating as designed. The other options describe genuine faults, not normal enable behavior.

18. C — Converting 1.5 meters yields approximately 4.9 feet (1.5 × 3.281 = 4.92). This is just under five feet from the datum. The 15-inch, 3.3-foot, and 9.8-foot values are incorrect conversions.

19. B — Calibrating below the specified ambient lighting minimum causes the camera to fail to resolve the target image clearly, aborting the calibration. The camera needs adequate light to read its reference. Low light does not blow a fuse, drop communication, or overheat the processor.

20. C — A target set too low introduces a vertical aim error that causes an incorrect or failed calibration. The camera builds its aim from the target's measured position, including height. Placement error does not create a short, change ultrasonic range, or kill the bus.

21. D — An implausible yaw rate input most directly impairs the camera's ability to distinguish a true lane departure from normal straight-line driving. Lane logic fuses yaw rate with vision. The faulty input does not affect windshield heating, HUD brightness, or ultrasonic communication.

22. D — A silicone film on the lens can distort or obscure the image, degrading detection and calibration. Any coating interferes with the optical path. It does not extend range, improve clarity, or self-recalibrate the camera.

23. B — Passing static but failing the dynamic drive most likely indicates a real-world condition or aim issue the static bay did not reveal. Dynamic verification exposes problems a controlled bay cannot. Wrong target size, low battery, and ultrasonic interference are not implied by this pattern.

24. A — Replacement glass must include the correct camera bracket and any required optical features. The camera's aim and image depend on proper bracket position and glass optics. Darker tint, omitting the bracket, or a thicker laminate would impair or prevent correct operation.

25. C — An "image sensor temperature high" code sets when the internal sensor temperature exceeds a defined operating limit. The enable criterion is thermal. Battery voltage, radar calibration, and ultrasonic detection are unrelated to this specific code.

26. A — A repeated calibration failure after A-pillar structural repair suggests the repair altered the windshield or bracket geometry, shifting the aim. Structural changes near the mount move the camera's reference. Wrong paper color, low battery, and connected ultrasonic sensors would not cause this.

27. B — The manufacturer's service information for that specific camera system is the proper resource for the diagnostic procedure and whether available information is adequate. It is authoritative for that model. Search results, universal sheets, and the owner's manual are not reliable diagnostic sources.

28. D — A "calibration not complete" result on a poorly marked road calls for repeating the drive on a route with clear markings meeting the specification. The route, not the camera, failed to provide references. Replacing the camera, unplugging radar, or lowering the bracket addresses the wrong cause.

29. B — An aftermarket phone holder blocking the camera's field of view will interfere with detection and must be removed before calibration. Any obstruction in the view degrades function. It does not improve low-light performance, have no effect, or extend range.

30. B — Confirming the lane-departure warning activates appropriately during a road test verifies the system performs its intended function under real driving conditions. On-road behavior is the proof of repair. It does not eliminate future recalibration, verify ultrasonic sensors, or confirm HUD orientation.

31. D — A radar "blockage" fault on a clean, dry bumper calls for checking whether excess paint, filler, or a hidden bracket is attenuating the signal. Hidden obstruction behind the cover is a known cause. Ultrasonic readings, the driver camera, and the cabin filter are unrelated to a radar blockage code.

32. B — A tight mounting-angle tolerance exists because small angular errors translate into large position errors at the radar's far detection range. A fraction of a degree compounds over distance. The angle does not change baud rate, supply voltage, or heater resistance.

33. C — A radar target placed off the specified lateral position produces an incorrect calibration that biases the radar's perceived target angle. The radar references the target's exact location. Misplacement does not create a short, change ultrasonic range, or kill the bus.

34. D — A 60 Ω reading where 120 Ω is expected indicates a short between the two CAN conductors somewhere in the harness. Bridging the lines roughly halves the measured value. An open reads high, a healthy bus reads its nominal value, and a dead battery would not produce this resistance.

35. D — Radar degradation only near freezing points to moisture or ice forming on or near the sensor face affecting the signal. Ice attenuates and reflects the radar transmission. A GPS lock loss, camera throttling, or driver-monitor shutdown would not be temperature-linked to radar range.

36. A — Both technicians are correct: a radar target must be placed at the specified height and the specified distance. Both geometric conditions are required for valid calibration. Omitting either misaligns the reference.

37. A — A bent bracket that exceeds the angular tolerance biases the radar aim, so ACC misjudges distances even after calibration "completes." The aim is physically off regardless of a completion message. Baud rate, firmware reversion, and bus sharing are not the mechanism.

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

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

40. C — A terminal pushed back and not fully seated should be reseated or repaired so it locks fully into the connector body. Restoring proper engagement fixes the intermittent contact. Sealant, raised voltage, and releasing the vehicle do not correct the seating fault.

41. B — Excessive following distance with no DTCs points to a radar aimed or mounted in a way that biases its perceived range to targets. A skewed beam misjudges distance. HUD brightness, a disconnected ultrasonic bus, and a temperature sensor supplying tire data are not real causes.

42. B — A floor slope beyond the specified limit tilts the vehicle and the radar beam, producing an inaccurate calibration. The sensor aims relative to vehicle attitude, which the slope disturbs. Slope does not block scan communication, open a fuse, or erase configuration.

43. A — A radar fault only when heavily loaded results from rear-end squat changing the radar's aim angle beyond its tolerance. Added weight alters the vehicle's attitude and beam direction. Cargo weight does not raise baud rate, starve supply current, or downgrade firmware.

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

45. C — The manufacturer-specified road test confirms the system performs correctly under actual real-world driving conditions. On-road verification is the final proof of the repair. It is not for recharging the battery, relearning TPMS, or warming the engine.

46. D — Rear sensors stopping short of their specified range call for first checking whether the sensor faces are partially obstructed by dirt, ice, or residue reducing effective range. A coated face shortens detection. Excess current, wrong speed signal, and a sensitivity option are not the first, simplest cause.

47. B — A sensor face coated with thick paint dampens the emitted and returning waves, reducing detection reliability. Ultrasonic operation depends on a clean emitting surface. Paint does not lengthen echo time usefully, focus the beam, or pass waves unimpeded.

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

49. A — One erratic sensor among healthy ones is most efficiently diagnosed by inspecting that sensor's physical condition and connector for obstruction, damage, or looseness. The fault is localized to that unit. Software version, bus termination, and radar supply voltage are system-wide factors, not single-sensor causes.

50. A — Proper operation 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.