

BONUS SECTION 3: CAN BUS & NETWORK COMMUNICATION FAULTS

50 Questions — Targeted Review

1. A technician measures resistance across the CAN bus terminals at the OBD II DLC with all modules powered down. The reading is 60 ohms. This measurement confirms:

A. One of the two CAN bus terminating resistors has failed open — a single 120-ohm resistor reads 120 ohms, not 60

B. Both CAN bus terminating resistors have failed — the correct reading should be infinite ohms with modules powered down

C. Both CAN bus terminating resistors are present and correct — two 120-ohm resistors wired in parallel produce a combined resistance of 60 ohms at the DLC, which is the normal CAN bus resistance measurement

D. The CAN bus has a short between CAN High and CAN Low — 60 ohms confirms a cross-circuit short

2. A technician measures resistance across the CAN bus terminals at the OBD II DLC and reads 120 ohms. The MOST likely cause is:

A. One terminating resistor has an open circuit — only one 120-ohm resistor is present in the parallel network, producing a reading of 120 ohms instead of the correct 60 ohms

B. Both terminating resistors are shorted together — the combined resistance of two shorted resistors reads 120 ohms

C. The CAN bus is functioning normally — 120 ohms is the correct resistance at the DLC

D. Both terminating resistors have failed open — infinite resistance would read at the DLC when both are open

3. A vehicle has U0073 — CAN Bus Off — stored in every module simultaneously including the PCM, BCM, TCM, ABS module, and instrument cluster. All modules logged the DTC on the same trip. The MOST likely cause is:

- A. All five modules developed simultaneous internal communication failures on the same trip
- B. The scan tool protocol is incompatible with this vehicle platform generating false network codes
- C. A U0073 Bus Off DTC stored simultaneously in all network modules indicates the CAN bus itself has gone offline — a short between CAN High and CAN Low wires or a catastrophic bus fault that caused all modules to detect communication loss at the same moment
- D. The PCM lost power causing a cascade communication failure across all network modules

4. A vehicle has U0100 — Lost Communication with PCM — stored in the BCM, TCM, ABS module, and instrument cluster. PCM power supply = 12.6V. PCM ground = 0.03V voltage drop. The MOST likely cause is:

- A. The battery is failing causing intermittent voltage drops that simulate PCM loss across all modules
- B. The PCM has lost its CAN bus connection — power and ground are confirmed normal, so the fault is in the CAN High or CAN Low wiring at the PCM connector or a PCM internal CAN transceiver failure
- C. All four modules have developed simultaneous independent communication faults
- D. The scan tool is reporting false U0100 codes from a software compatibility issue

5. A technician measures CAN High voltage at the DLC with the ignition on and engine running. The reading is 2.5V at all times with no variation. CAN Low measures 2.5V at all times with no variation. The MOST likely cause is:

- A. Normal CAN bus operation — 2.5V on both lines with no variation is the correct idle state voltage
- B. A failed CAN bus terminating resistor causing voltage collapse on both lines simultaneously
- C. A short between CAN High and CAN Low — when the two wires are shorted together both lines are pulled to the same midpoint voltage (2.5V) with no ability to vary — eliminating all communication on the bus
- D. The PCM is in sleep mode causing both CAN lines to stabilize at the midpoint voltage

6. A vehicle has U0155 — Lost Communication with Instrument Panel Cluster — stored in the PCM and BCM. All other modules communicate normally. The instrument cluster displays are blank. The MOST appropriate first diagnostic step is:

- A. Replace the instrument cluster — U0155 stored in two modules confirms the cluster has failed internally
- B. Check power supply voltage and ground integrity at the instrument cluster connector — a cluster with no power or no ground cannot communicate and will generate U0155 in all modules attempting to communicate with it
- C. Inspect the CAN bus wiring for a short between CAN High and CAN Low at the instrument cluster branch
- D. Replace the BCM — BCM internal faults can generate false U0155 codes in the PCM

7. A vehicle has no communication with any module using a scan tool. The scan tool communicates normally on other vehicles. The MOST likely cause is:

- A. The scan tool software needs updating — a software version mismatch prevents communication on newer vehicles
- B. Multiple modules have simultaneously failed their internal communication circuits
- C. A CAN bus fault affecting the entire network — possible causes include a short to ground on either CAN High or CAN Low, a break in the main CAN bus backbone, or loss of power/ground to the scan tool's OBD II communication circuit at the DLC
- D. The OBD II DLC has an internal fault — DLC faults commonly prevent all module communication simultaneously

8. A vehicle has a U0073 Bus Off stored only in the PCM. All other modules communicate normally with the scan tool. PCM CAN bus wiring tests normal. The MOST likely cause is:

- A. A partial CAN bus short affecting only the PCM branch of the network
- B. An internal PCM CAN transceiver failure — a module-specific Bus Off DTC with normal CAN bus wiring and normal communication on all other modules points to an internal fault within the PCM's CAN communication circuit
- C. A terminating resistor open circuit affecting only the PCM network segment
- D. The PCM software requires reprogramming to resolve a known CAN communication fault

9. A vehicle has all non-drivetrain module communication normal. The TCM stores U0100 — Lost Communication with PCM. The PCM stores U0101 — Lost Communication with TCM. Both modules have correct power and ground. The MOST likely cause is:

- A. Both modules have simultaneously developed internal CAN transceiver failures
- B. The CAN bus backbone has a fault affecting only the PCM-TCM communication segment of the network
- C. A fault in the dedicated CAN communication circuit between the PCM and TCM — possibly a break, short, or corrosion in the wiring segment connecting these two modules specifically, or a failed terminating resistor on that network segment
- D. The PCM requires reprogramming — software faults can cause PCM-TCM communication dropouts

10. A technician scopes CAN High at the DLC while an assistant operates the ignition. Normal CAN bus activity should show:

- A. CAN High varying between 0V and 5V with rapid transitions representing digital communication frames
- B. CAN High stable at 12V during normal module communication activity
- C. CAN High varying between 0V and 12V representing the dominant and recessive bit states of CAN communication
- D. CAN High varying between approximately 2.5V (recessive state) and approximately 3.5V (dominant state) representing normal differential CAN bus communication signal activity

11. A vehicle has U0100 stored in five modules simultaneously. PCM power and ground are confirmed normal. CAN bus resistance at the DLC measures 120 ohms. The MOST likely cause is:

- A. PCM power is actually intermittent — the 12.6V reading was taken during a stable period masking the true intermittent fault
- B. The PCM is offline and has been removed from the CAN network — U0100 in multiple modules confirms the PCM is not communicating, and 120-ohm resistance instead of 60 ohms indicates one terminating resistor is missing, suggesting the PCM contains one of the two bus terminating resistors and is no longer connected to the network
- C. A CAN High to CAN Low short — this would produce near-zero resistance, not 120 ohms
- D. The scan tool is generating false U0100 codes from a network loading issue

12. A vehicle has a U0121 — Lost Communication with ABS Control Module — stored in the PCM and BCM. ABS module power supply and ground are confirmed correct. CAN bus resistance at the DLC is 60 ohms (normal). The MOST appropriate next step is:

- A. Replace the ABS module — U0121 in two modules with confirmed power and ground confirms an internal module failure
- B. Inspect the CAN bus wiring at the ABS module connector for corrosion, terminal push-back, or a broken wire at the module connector — power and ground confirmed normal with correct bus resistance points to a wiring fault at the module connector or branch circuit before condemning the module
- C. Inspect the CAN bus backbone for a short between CAN High and CAN Low
- D. Check the ABS module programming — a corrupted calibration can cause communication loss without affecting power or ground

13. CAN High and CAN Low are described as a DIFFERENTIAL pair. This means:

- A. CAN High always carries a higher voltage than CAN Low regardless of the bit state being transmitted
- B. CAN High and CAN Low carry identical voltages that are compared to determine bit state
- C. The communication signal is represented by the VOLTAGE DIFFERENCE between CAN High and CAN Low — during a dominant bit CAN High rises to approximately 3.5V while CAN Low drops to approximately 1.5V, creating a 2V differential — during a recessive bit both lines rest at 2.5V with zero differential
- D. CAN High and CAN Low carry opposing phase signals that cancel each other out to reduce electromagnetic interference

14. A vehicle has multiple U-codes stored across several modules after a front-end collision repair. All module power and grounds are verified correct. CAN bus resistance at the DLC reads infinite ohms. The MOST likely cause is:

- A. All modules were damaged in the collision and require simultaneous replacement
- B. The collision repair severed or disconnected the main CAN bus backbone wiring — infinite resistance instead of 60 ohms confirms both terminating resistors are disconnected from the network, indicating a complete break in the bus backbone
- C. The battery was disconnected during repair causing all module memories to reset and generate false U-codes

D. The OBD II DLC was damaged in the collision — DLC damage prevents resistance testing and generates false readings

15. A vehicle has U0073 Bus Off stored in all modules. CAN bus resistance at the DLC measures near zero ohms (0.3 ohms). The MOST likely cause is:

A. Both terminating resistors are shorted internally — internal resistor shorts produce near-zero resistance

B. A module with an internal power short is pulling the CAN bus to ground

C. A CAN bus wiring harness damaged section is creating a short circuit directly between the CAN High and CAN Low wires — near-zero resistance between the two bus lines with Bus Off in all modules is the definitive CAN High-to-CAN Low short circuit presentation

D. Near-zero resistance at the DLC is normal when multiple modules are actively communicating on the bus

16. A vehicle has a U0100 stored in the BCM only. The PCM communicates normally with the scan tool. All other modules communicate normally. BCM power and ground are correct. The MOST likely cause is:

A. The PCM has an internal fault affecting its communication with the BCM only

B. A fault in the CAN bus branch circuit between the BCM and the main CAN bus backbone — with the PCM communicating normally with the scan tool and all other modules functioning, the fault is isolated to the BCM's network connection, not the PCM or main backbone

C. The BCM has stored a false U0100 from a software glitch requiring reprogramming

D. The BCM is generating U0100 because it is not receiving CAN messages from the PCM — this indicates the PCM is selectively not transmitting to the BCM

17. A vehicle has no start, no communication with the PCM, and all other modules communicate normally. The PCM has confirmed power at all supply circuits and confirmed ground at all ground circuits. The MOST likely cause is:

A. The PCM has experienced a catastrophic internal failure requiring replacement

B. The PCM requires reprogramming — a corrupted calibration prevents startup and communication simultaneously

C. A fault in the PCM's CAN bus connection — internal power and ground confirmed normal with no PCM communication and normal communication on all other modules points to a failed CAN transceiver within the PCM or a CAN bus wiring fault at the PCM connector preventing the PCM from accessing the network

D. An immobilizer fault is preventing PCM communication and startup simultaneously

18. A vehicle has a U0001 — High Speed CAN Communication Bus — stored in multiple modules after a wiring harness repair. The technician should FIRST:

A. Replace all modules that stored U0001 simultaneously — simultaneous storage confirms internal module failures

B. Verify the CAN bus resistance at the DLC — a wiring harness repair that disturbed CAN bus wiring could have introduced a resistance fault (open or short) detectable by resistance measurement before chasing individual wiring segments

C. Perform a full module reprogramming sequence to clear the bus fault from all module memories

D. Replace the main wiring harness — harness repairs frequently introduce latent faults requiring full replacement

19. A vehicle has intermittent U-codes that set and clear without apparent pattern. No hard faults are present at the time of diagnosis. The MOST likely cause is:

A. Multiple modules with intermittent internal communication failures developing simultaneously

B. A scan tool software issue generating random false U-codes during monitoring

C. The scan tool being used is not compatible with this vehicle's CAN protocol

D. An intermittent connection fault in the CAN bus wiring — corrosion, a partially pushed-back terminal, a chafed wire with intermittent ground contact, or a loose connector at a module or junction point that creates momentary communication dropouts generating U-codes that clear when the connection restores

20. A vehicle has the following scan tool observation: all module PIDs update normally EXCEPT the transmission temperature PID, which is frozen at a fixed value. No U-codes are stored. The MOST likely cause is:

A. The PCM is not requesting the transmission temperature PID from the TCM during normal operation

B. The transmission temperature sensor has failed — a failed sensor always produces a frozen PID in the scan tool data

C. A CAN bus fault affecting only TCM temperature data transmission while preserving other TCM communication

D. The scan tool is displaying a cached value for the transmission temperature PID — frozen PIDs without U-codes commonly indicate a scan tool data refresh issue rather than a genuine module communication fault

21. A vehicle has U0100 stored in four modules. PCM power and ground are confirmed normal. CAN bus resistance at the DLC is 60 ohms (normal). CAN High and CAN Low show normal voltage differential on a scope. The MOST likely cause is:

A. An intermittent PCM internal fault — with confirmed normal power, ground, bus resistance, and wiring, the PCM itself is the remaining suspect for generating U0100 in all other modules

B. A CAN bus backbone short between CAN High and CAN Low confirmed by the 60-ohm resistance reading

C. Multiple modules failing simultaneously confirmed by U0100 in four modules

D. A PCM calibration corruption causing intermittent communication dropouts while maintaining correct bus voltages

22. A vehicle has a confirmed theft deterrent system fault alongside multiple U-codes. The engine will not start. No power or ground faults are found at any module. CAN bus resistance is 60 ohms. The MOST likely diagnostic approach is:

A. Replace the PCM — theft deterrent faults combined with no-start and multiple U-codes confirm PCM internal failure

B. Diagnose the theft deterrent system fault first — an active immobilizer preventing the PCM from entering normal operating mode can generate multiple U-codes as a secondary effect of the PCM not fully initializing on the network

C. Diagnose all U-codes first — resolving network communication faults will clear the theft deterrent fault

D. Replace the BCM — immobilizer faults originate in the BCM and the U-codes are secondary to the BCM fault

23. CAN bus wiring is twisted pair construction. The PRIMARY reason for twisting CAN High and CAN Low wires together is:

- A. To increase the resistance of the bus wiring to the correct termination specification
- B. To ensure the two wires remain at the same physical length throughout the harness routing
- C. Twisted pair construction minimizes electromagnetic interference — any external electromagnetic field induces equal and opposite noise into both twisted wires simultaneously, and because CAN communication reads the DIFFERENCE between the two wires, the common-mode noise cancels out, preserving signal integrity
- D. Twisting prevents the wires from contacting other circuits in the harness, reducing the risk of short circuits

24. A vehicle has U0073 Bus Off stored only in the TCM. All other modules communicate normally. TCM power and ground are confirmed normal. CAN bus resistance is 60 ohms at the DLC. The MOST likely cause is:

- A. A short to ground on the CAN High wire at the TCM branch circuit — this would affect all modules, not just the TCM
- B. An internal TCM CAN transceiver failure — a module-specific Bus Off with normal bus wiring, normal power/ground, and correct bus resistance at the DLC points to the TCM's internal CAN communication circuit as the fault location
- C. A break in the CAN bus backbone between the TCM and the DLC
- D. A wiring fault on the TCM branch circuit disconnecting it from the main bus backbone

25. A vehicle has no communication with the scan tool at the OBD II DLC. Battery voltage at the DLC power terminal (pin 16) is 12.6V. Ground at DLC pin 4 and pin 5 is 0.1V above chassis ground. CAN bus resistance at the DLC terminals is 60 ohms. The MOST likely cause is:

- A. The CAN bus has a complete break in the backbone preventing scan tool communication despite correct resistance
- B. The DLC ground circuits have excessive resistance — 0.1V above chassis ground on DLC ground pins is excessive and may prevent scan tool communication
- C. The scan tool communication cable has an internal fault — DLC power, ground, and resistance are all confirmed normal, pointing to a scan tool or connection fault rather than a vehicle network fault

D. The DLC power circuit fuse has failed — 12.6V at pin 16 is a false reading masking the actual open circuit

26. A vehicle has U0140 — Lost Communication with Body Control Module — stored in the PCM. BCM power supply and ground are confirmed normal. The BCM communicates normally with other modules. The MOST likely cause is:

A. The PCM has an internal fault preventing it from receiving BCM messages on the CAN bus

B. A fault specific to the PCM-to-BCM communication path — a break, short, or corrosion in the CAN bus segment between the PCM and BCM star point, or a gateway module fault between the two if they communicate through a gateway

C. The BCM has an internal fault that prevents it from transmitting to the PCM specifically while communicating with all other modules

D. A PCM calibration fault is causing false U0140 storage without a genuine communication fault

27. A vehicle has multiple modules storing U-codes after a battery replacement was performed without a memory saver. All modules have correct power and ground. CAN bus resistance is 60 ohms. The MOST likely explanation for the U-codes is:

A. The battery replacement caused permanent damage to all module CAN transceivers

B. The new battery has insufficient cold cranking amperage for this vehicle platform, causing intermittent communication dropouts

C. A wiring harness connector was disturbed during the battery replacement creating an intermittent connection fault

D. The U-codes were generated during module reinitialization after power loss — when all modules power up simultaneously without a proper handshake sequence, temporary communication conflicts generate U-codes that may clear on subsequent drive cycles as modules establish normal communication

28. A vehicle has U0073 Bus Off stored in all modules. CAN bus resistance at the DLC is 60 ohms (normal). CAN High measures 3.5V constant with no variation. CAN Low measures 1.5V constant with no variation. The MOST likely cause is:

A. Normal CAN bus communication activity — 3.5V on CAN High and 1.5V on CAN Low confirm active dominant bit transmission

B. A module on the network is permanently driving a dominant bit — forcing the bus into a constant dominant state (Bus Off condition) prevents any other module from transmitting, effectively shutting down all bus communication despite normal bus resistance

C. Both terminating resistors have failed, causing voltage collapse on both bus lines simultaneously

D. The PCM is the dominant module and is holding the bus in the dominant state during normal high-priority message transmission

29. A vehicle has a U0073 Bus Off condition. The technician disconnects modules one at a time while monitoring CAN bus activity. When the TCM is disconnected, normal CAN bus communication immediately resumes. The MOST likely conclusion is:

A. The TCM connector has a wiring fault that was relieved by disconnection, not a TCM internal fault

B. The TCM was detected as the source of the Bus Off condition — when a module with a failed internal CAN transceiver is forcing the bus offline, disconnecting that module restores normal bus communication, and the TCM is confirmed as the fault source requiring replacement or further internal diagnosis

C. The TCM branch circuit has a short that was eliminated when the connector was unplugged

D. Disconnecting the TCM removed one terminating resistor, changing bus impedance and restoring communication

30. A vehicle has a U0001 High Speed CAN Bus fault. The technician performs a CAN bus resistance check at the DLC and reads 40 ohms. The MOST likely cause is:

A. Both terminating resistors have failed open — open resistors would produce infinite resistance, not 40 ohms

B. The CAN bus resistance is lower than the correct 60-ohm specification — a resistance below 60 ohms indicates a partial short between CAN High and CAN Low, or an additional unintended resistance path has been added to the parallel network (such as an improperly installed aftermarket module or a wiring splice contacting the opposite bus wire)

C. One terminating resistor has failed open — a single resistor reads 120 ohms, not 40 ohms

D. Normal bus resistance variation — 40 ohms is within the acceptable tolerance for CAN bus resistance measurement

31. A vehicle has a U0073 Bus Off in all modules. After extensive diagnosis, the fault is traced to a chafed CAN High wire contacting a ground wire at a harness routing point behind the left kick panel. This fault type produces:

A. A CAN High open circuit — wire chafing through insulation to a ground wire causes an open on CAN High

B. A CAN High short to ground — CAN High contacting a ground wire pulls CAN High voltage toward 0V, collapsing the voltage differential between CAN High and CAN Low and preventing all modules from distinguishing dominant from recessive bit states — effectively shutting down all bus communication

C. A CAN bus resistance increase — insulation damage without wire contact increases resistance between modules

D. A CAN Low short to battery voltage — CAN High contacting a ground wire affects CAN Low by induction

32. A vehicle has U0100 stored in all accessory modules but NOT in the TCM. The TCM and PCM communicate normally. All other modules report losing the PCM. PCM power and ground are correct. The MOST likely cause is:

A. The PCM has an internal fault affecting communication with all modules except the TCM

B. The PCM is communicating on the high-speed CAN bus (shared with TCM) but has lost communication on the medium-speed or body CAN bus segment — a dual-bus architecture vehicle can have the PCM active on one bus while offline on another, explaining why the TCM (same bus) sees the PCM but body/accessory modules (different bus) do not

C. The TCM is generating false communication data that masks the PCM's loss from the network

D. All accessory modules have simultaneously developed identical internal communication faults

33. A vehicle has a scan tool that shows all modules present and communicating, but several PIDs show "no data" or "not supported." No U-codes are stored. The MOST likely cause is:

A. A partial CAN bus fault that allows module presence but blocks specific PID data transmission

B. A terminating resistor fault causing selective PID data loss while preserving module communication frames

C. The specific PIDs showing "no data" are either not supported on this vehicle's configuration, require a different scan tool mode to access, or the scan tool software database does not include

those PIDs for this platform — this is a scan tool compatibility or database issue, not a genuine network communication fault

D. The PCM is selectively blocking specific PID data requests from non-manufacturer scan tools

34. A vehicle has a high-pitched whine from the speaker system that changes with engine RPM. No U-codes are stored. All modules communicate normally. The MOST likely cause is:

A. A CAN bus fault causing the audio module to misinterpret RPM data as audio signals

B. A failing alternator with AC ripple voltage — AC ripple from a failing alternator diode contaminates the vehicle's electrical system and can be reproduced through speaker systems as a whine that tracks engine RPM, while having no direct relationship to CAN bus communication

C. An audio module receiving corrupted RPM data from the CAN bus and converting it to audio output

D. A ground loop between the audio system and the engine management system transmitted via the CAN bus data lines

35. A vehicle has a U0073 Bus Off after an aftermarket remote start system was installed. Prior to the installation the vehicle had no network faults. The MOST likely cause is:

A. The remote start installation drained the battery causing module reinitialization faults

B. A pre-existing intermittent CAN bus fault that was present before the remote start installation

C. The remote start module was wired incorrectly and is connected to the CAN bus — an aftermarket module with an incorrect CAN interface or incorrect termination connected to the network can introduce a bus fault by creating incorrect impedance, incorrect voltage levels, or dominant bit forcing

D. The remote start module is drawing excessive current from the OBD II DLC power circuit

36. A vehicle has a U0073 Bus Off stored in all modules. After repairing a confirmed CAN High-to-CAN Low short, the technician clears all codes. On the next drive cycle U0073 returns in all modules. CAN bus resistance at the DLC now reads 60 ohms. The MOST likely cause is:

A. The original short was not fully repaired — 60-ohm resistance confirms the short is still present

B. A second independent CAN bus fault exists that was masked by the original short — after repairing the first fault, a second fault (possibly an intermittent short or open in a different harness segment) is now producing Bus Off

C. The modules need to be reprogrammed after a Bus Off event before CAN communication can fully restore

D. The 60-ohm resistance reading is incorrect — CAN bus shorts always produce resistance below 60 ohms when present

37. A vehicle has U0100 stored only in the instrument cluster. PCM communicates normally with all other modules including the scan tool. Instrument cluster power and ground are confirmed normal. CAN bus resistance is 60 ohms. The MOST likely cause is:

A. The PCM has an internal fault affecting its communication with the instrument cluster only

B. The CAN bus backbone has a fault between the PCM and the instrument cluster junction point

C. A fault in the instrument cluster's CAN bus branch circuit — with the PCM communicating normally with the scan tool and all other modules, and confirmed normal bus resistance and cluster power/ground, the fault is isolated to the cluster's specific network connection or an internal cluster CAN transceiver issue

D. The instrument cluster software requires an update to restore CAN communication with the PCM

38. A technician performing a CAN bus diagnosis notices that CAN High voltage measures 2.5V and CAN Low measures 2.5V during a period when no modules should be in sleep mode. This voltage pattern indicates:

A. Normal CAN bus recessive state — both lines at 2.5V with no differential is the correct recessive state when the bus is idle but active

B. A CAN bus open circuit — when the bus has an open break, both lines float to 2.5V midpoint voltage

C. Both terminating resistors are functioning correctly — 2.5V on both lines confirms correct bus termination

D. Both CAN lines shorted to each other — 2.5V on both lines is the midpoint voltage of a CAN High-to-CAN Low short

39. A vehicle has a U0073 Bus Off after water intrusion into a connector in the left front wheel well. The connector houses CAN High and CAN Low wires along with several power and ground circuits. The MOST likely specific fault created by the water intrusion is:

- A. A CAN bus open circuit from corrosion breaking the wire inside the connector terminal
- B. A module power circuit fault from water bridging the power and ground terminals in the connector
- C. The water intrusion has no effect on CAN communication if the connector is sealed properly
- D. Water bridging between the CAN High and CAN Low terminals in the connector creates a direct electrical path between the two bus wires — effectively a CAN High-to-CAN Low short that pulls both lines to the midpoint voltage and produces Bus Off across all network modules

40. A vehicle has U0073 Bus Off stored in the PCM, BCM, and TCM but NOT in the ABS module or instrument cluster. Normal CAN communication is confirmed in the ABS module and cluster. The MOST likely conclusion is:

- A. The PCM, BCM, and TCM have simultaneous internal CAN transceiver failures
- B. The vehicle has two separate CAN bus networks — the PCM, BCM, and TCM share one network segment that has a fault, while the ABS module and instrument cluster operate on a separate network segment that is functioning normally
- C. The ABS module and instrument cluster are suppressing U0073 storage due to their lower network priority
- D. The CAN bus backbone between the TCM and the ABS module junction has a fault isolating the two network segments

41. A vehicle has a U0001 High Speed CAN Bus fault. The technician performs a CAN High wire resistance test from the DLC to each module connector with the wire disconnected from both ends. One segment measures 4.2 ohms while all others measure less than 0.5 ohms. The MOST likely cause is:

- A. The 4.2-ohm segment has a broken wire with partial strand contact — a partial break increases resistance significantly while maintaining some continuity and may produce intermittent communication faults under vibration or thermal stress
- B. 4.2 ohms is within acceptable range for CAN bus wiring resistance — no fault is present
- C. The high resistance segment confirms a CAN High-to-CAN Low short at that harness location
- D. The 4.2-ohm reading indicates the terminating resistor for that module segment has shifted in value

42. A vehicle has a confirmed U0073 Bus Off. The technician disconnects each module connector one at a time from a T-connector junction block. After disconnecting the connector for the left body zone module, CAN bus voltage immediately returns to normal differential activity. The technician should conclude:

A. The left body zone module connector has a wiring fault — disconnection relieved the fault in the connector wiring before the module itself

B. The left body zone module is the source of the Bus Off fault — disconnecting it restored normal bus activity, confirming either an internal CAN transceiver failure in the module or a wiring fault on its branch circuit. The branch circuit should be verified before condemning the module

C. The left body zone module was drawing excessive current that was creating a voltage fault on the CAN bus

D. The junction block connection for the left body zone module was the fault — the module itself is not at fault

43. A vehicle has a U0073 Bus Off after a PCM replacement. The replacement PCM was sourced from a salvage vehicle of a different trim level. The MOST likely cause is:

A. The replacement PCM was not properly programmed with the vehicle's VIN

B. The salvage PCM has an internal CAN transceiver failure from previous vehicle damage

C. The salvage PCM from a different trim level may have a different CAN bus configuration, different terminating resistor value, or different network protocol that is incompatible with this vehicle's CAN bus — causing it to disrupt bus communication when connected

D. The replacement PCM requires a battery learn procedure before it can join the CAN network

44. A vehicle has a U0100 stored across all modules except the PCM itself. The technician connects a scan tool and successfully communicates with the PCM. PCM power and ground are confirmed normal. CAN bus resistance is 60 ohms. The MOST likely cause is:

A. The PCM is communicating with the scan tool via a dedicated diagnostic line separate from the main CAN bus — the PCM may be online for scan tool communication but not transmitting on the main CAN bus to other modules

B. All other modules have simultaneously lost their ability to receive PCM messages

C. A CAN bus backbone fault between the PCM connector and the network junction is isolating PCM CAN messages from reaching other modules while still allowing scan tool communication

D. The PCM software has corrupted CAN bus transmission routines while preserving diagnostic communication functions

45. A vehicle has U0073 Bus Off stored in all modules. Resistance between CAN High and chassis ground measures 3.2 ohms. Resistance between CAN Low and chassis ground measures 58 ohms. The MOST likely cause is:

A. CAN Low has an open circuit — 58 ohms on CAN Low indicates a break in the low-side bus wire

B. CAN High has a short to ground — the near-zero resistance (3.2 ohms) between CAN High and chassis ground confirms CAN High is shorted to ground, pulling CAN High voltage toward zero and eliminating the voltage differential required for bus communication

C. Both bus lines have resistance faults — CAN High short and CAN Low open are present simultaneously

D. The terminating resistors have an internal ground fault producing the 3.2-ohm reading on CAN High

46. A vehicle has a U0073 Bus Off that is intermittent — occurring only when the vehicle is fully warmed up. Cold operation is normal. The MOST likely cause is:

A. Multiple modules developing communication faults only when hot

B. A PCM software fault that triggers Bus Off mode during closed-loop fuel control at operating temperature

C. A temperature-sensitive intermittent fault in a CAN bus connector, splice, or wiring segment — thermal expansion at operating temperature is opening an intermittent connection or creating a short as insulation softens or a connector with marginal contact becomes resistive when hot

D. The CAN bus terminating resistors drifting out of specification when hot causing impedance mismatch

47. A vehicle has a no-communication condition at a freshly purchased scan tool. The vehicle communicates normally with the shop's other scan tool. Battery voltage at DLC pin 16 is 12.6V. DLC grounds are correct. CAN bus resistance is 60 ohms. The MOST likely cause is:

A. The DLC has a fault affecting only new scan tools and not established tools

B. CAN bus resistance being 60 ohms confirms a network fault that only newer scan tools can detect

C. The new scan tool requires a software update, correct vehicle-specific protocol selection, or proper initialization before it can establish communication — the vehicle network is confirmed normal and the issue is with the new scan tool setup

D. The vehicle CAN bus protocol is incompatible with aftermarket scan tools requiring dealer-only equipment

48. A vehicle has U0100 stored in three body control modules simultaneously after a front collision. PCM power and ground are confirmed normal. CAN bus resistance at the DLC is 120 ohms. The MOST likely cause is:

A. The collision damaged all three body control modules simultaneously

B. The collision damaged the PCM internally causing all three modules to lose PCM communication

C. The collision severed the main CAN bus backbone wiring — 120-ohm resistance instead of 60 ohms indicates one terminating resistor has been disconnected from the network, and the PCM may contain one of the two terminating resistors and is now isolated from the remaining network segment

D. The collision caused the CAN bus to enter a protective high-resistance state to prevent electrical damage

49. A vehicle has a U0073 Bus Off condition. After replacing a confirmed failed module, the technician clears all codes and verifies the bus is operating normally on a test drive. Three days later the customer returns with U0073 again. The MOST likely cause is:

A. The replacement module has also failed internally — the same Bus Off condition has returned

B. The original module fault was correctly repaired but an intermittent CAN bus wiring fault that was masked by the module fault is now producing Bus Off independently — intermittent wiring faults (chafed insulation, corroded connector, pinched wire) can be temporarily masked by a dominant module fault and reveal themselves after the primary fault is repaired

C. The module requires reprogramming to prevent a recurring Bus Off condition

D. The CAN bus requires full replacement — recurring Bus Off conditions always indicate harness-level deterioration

50. A vehicle has U0073 Bus Off stored in all modules. After performing a complete CAN bus diagnosis including resistance checks, wiring continuity, scope analysis, and individual module disconnection testing, no fault is found. All measurements are within specification. All modules communicate normally during testing. The MOST likely explanation is:

A. The diagnostic equipment is faulty — accurate equipment would identify the fault

B. A module internal fault that is not detectable with standard test methods requires all modules to be replaced

C. An intermittent CAN bus fault that is not present during diagnosis — a loose connector, thermally-sensitive wiring splice, or vibration-dependent contact fault that only occurs under specific conditions (temperature, vibration, load) can set Bus Off codes without being present during static bench-level testing

D. The U0073 codes were generated by a software update that was applied before the customer brought the vehicle in — no actual fault exists

BONUS SECTION 3: ANSWER KEY AND EXPLANATIONS

1. C — 60 Ohms Confirms Both Resistors Present — The CAN bus uses two 120-ohm terminating resistors placed at each end of the bus backbone. Two 120-ohm resistors in parallel produce a combined resistance of 60 ohms ($1/R = 1/120 + 1/120 = 1/60$). A reading of 60 ohms at the DLC confirms both terminating resistors are present, correctly connected, and functioning — the CAN bus termination is intact.

2. A — One Terminating Resistor Open — When one of the two 120-ohm terminating resistors is open (disconnected or failed), only one resistor remains in the parallel network. A single 120-ohm resistor measured at the DLC reads 120 ohms instead of the correct 60 ohms. This confirms one terminating resistor is missing from the network — either failed internally, disconnected at its module, or wired open by a harness fault.

3. C — CAN Bus Offline Fault — U0073 Bus Off stored simultaneously in every module on the network on the same trip is the signature of a bus-level fault, not individual module failures. The most common causes are a CAN High-to-CAN Low short, a short to ground on either bus wire, or a module forcing the bus offline by continuously transmitting without releasing the bus — all preventing any module from communicating.

4. B — PCM CAN Bus Connection Fault — U0100 in four modules with PCM power (12.6V) and PCM ground (0.03V) confirmed normal eliminates a PCM power fault. The PCM is powered but not communicating on the network. The fault is in the PCM's CAN bus connection — broken CAN High or CAN Low wire at the PCM connector, corroded PCM CAN terminals, or an internal PCM CAN transceiver failure.

5. C — CAN High-to-CAN Low Short — Normal CAN bus operation produces CAN High varying between 2.5V (recessive) and 3.5V (dominant) and CAN Low varying between 2.5V (recessive) and 1.5V (dominant) with no differential. When CAN High and CAN Low are shorted together both lines are electrically tied at 2.5V with no ability to vary — the bus cannot transmit any information and all module communication fails.

6. B — Power and Ground First — Before condemning the instrument cluster for an internal fault, power and ground integrity must be confirmed. A cluster with a failed fuse, an open power supply circuit, or a high-resistance ground cannot power its CAN transceiver and will appear offline to all other modules. This is the most efficient and least expensive first step before any component replacement.

7. C — Network-Level Fault Confirmed — When a verified functional scan tool cannot communicate with any module on a vehicle it normally works on, the fault is in the vehicle's network — not the scan tool. A CAN bus short to ground, an open bus backbone, or a loss of the

scan tool's communication power/ground circuit at the DLC are the primary candidates for total communication failure.

8. B — Internal PCM CAN Transceiver Failure — A Bus Off DTC stored only in the PCM with normal CAN bus wiring, normal bus resistance, and normal communication on all other modules eliminates a wiring or network-level fault. The PCM's internal CAN transceiver — the circuit that physically drives and receives signals on the bus — has failed internally, causing the PCM to detect Bus Off on its own communication port while the network itself remains functional.

9. C — PCM-TCM Wiring Segment Fault — U0100 in the TCM and U0101 in the PCM with all other modules communicating normally isolates the fault to the communication path between these two modules specifically. A break, short, corrosion, or failed terminating resistor on the wiring segment connecting the PCM and TCM is the most likely physical cause of mutual communication loss between two modules that are otherwise on a healthy network.

10. D — CAN High Normal Voltage Range — Normal CAN bus CAN High voltage varies between approximately 2.5V (recessive bit — both lines at midpoint, no differential) and approximately 3.5V (dominant bit — CAN High rises, CAN Low drops, creating approximately 2V differential). This differential voltage pattern represents the actual communication frames being transmitted between modules.

11. B — PCM Contains One Terminating Resistor — U0100 across multiple modules with 120-ohm resistance instead of 60 ohms indicates one terminating resistor is missing from the network. In many vehicle architectures, one terminating resistor is located inside the PCM. If the PCM is offline (confirmed by U0100 in all other modules), its internal terminating resistor is also removed from the network — changing resistance from 60 ohms to 120 ohms.

12. B — Wiring at Module Connector — With ABS module power and ground confirmed normal and CAN bus resistance confirmed at 60 ohms (both terminating resistors present), the fault is not a bus-level wiring or termination issue. The fault is isolated to the ABS module's specific CAN connection — the branch circuit wiring from the module connector to the main bus backbone, or corrosion at the connector terminals preventing reliable communication.

13. C — Differential Signaling Definition — CAN communication uses differential signaling where the information is carried by the voltage DIFFERENCE between CAN High and CAN Low — not by the absolute voltage of either wire individually. During dominant bits the differential is approximately 2V (CAN High 3.5V, CAN Low 1.5V). During recessive bits both lines rest at 2.5V with zero differential. This differential design provides immunity to common-mode electrical noise.

14. B — Collision Severed CAN Bus Backbone — Infinite resistance at the DLC with multiple U-codes after a collision confirms both terminating resistors are electrically disconnected from the DLC measurement point. A collision that breaks or disconnects the main CAN bus backbone

removes both terminating resistors from the measurable network, producing infinite resistance and preventing any module from communicating through the damaged section.

15. C — CAN High-to-CAN Low Short Circuit — Near-zero resistance (0.3 ohms) between the CAN bus terminals at the DLC with Bus Off stored in all modules is the definitive CAN High-to-CAN Low short circuit presentation. A direct electrical path between the two bus wires creates a near-zero resistance path and pulls both lines to the same voltage, eliminating the differential required for communication and generating Bus Off across the entire network.

16. B — BCM Branch Circuit Fault — PCM communicating normally with the scan tool and all other modules confirms the PCM and main bus backbone are functional. Normal BCM power and ground confirm the module has its basic operating requirements. With all other network elements confirmed normal, the fault is specific to the BCM's CAN bus branch circuit — the wiring from the BCM connector to the main bus backbone, or a BCM internal CAN transceiver fault.

17. C — PCM CAN Transceiver or Connection Fault — Internal PCM power confirmed normal at all circuits eliminates a PCM power fault. Normal communication on all other modules confirms the network is functional. A PCM that has power and ground but cannot communicate on the network and will not start points to a failed CAN transceiver inside the PCM or a break in the PCM's CAN bus wiring preventing it from receiving the network signals needed for normal PCM initialization.

18. B — CAN Bus Resistance Check First — After a wiring harness repair that disturbed CAN bus wiring, the resistance check at the DLC is the fastest and most informative first step. A correct 60-ohm reading confirms bus termination is intact. A reading of 120 ohms or infinite confirms an open in the network. Near-zero confirms a short. This single measurement quickly directs the diagnosis before time is spent chasing individual harness segments.

19. D — Intermittent Connection Fault — Intermittent U-codes that set and clear without a hard fault present are the signature of an intermittent physical connection fault in the CAN network. Corrosion at a module connector, a partially backed-out terminal, a wire with intermittent ground contact at a chafe point, or a connector that loses contact during temperature changes or vibration all produce momentary dropouts that generate U-codes clearing when the connection restores.

20. D — Scan Tool Data Refresh Issue — A frozen PID without any U-codes and with all module communication otherwise normal is most commonly a scan tool data display or refresh issue. Some scan tools cache the last known value for a PID that stops updating rather than displaying an error. Without U-codes confirming actual module communication loss, a scan tool software or refresh issue is more likely than a genuine partial CAN bus fault.

21. A — Intermittent PCM Internal Fault — With all testable parameters confirmed normal — power, ground, bus resistance, and CAN bus wiring voltages — and U0100 still stored in four modules, the fault is within the PCM itself. An intermittent internal fault in the PCM that causes it

to drop off the network momentarily produces U0100 in all communicating modules without leaving any detectable evidence in static wiring or bus tests.

22. B — Diagnose Theft Deterrent First — An active immobilizer system preventing the PCM from fully initializing will prevent the PCM from entering normal operating mode and joining the CAN network. A PCM that is powered but being held in a restricted state by the immobilizer will appear offline to other modules, generating U0100 codes as a secondary effect. Resolving the immobilizer fault first eliminates a major source of secondary U-codes before pursuing network diagnosis.

23. C — Twisted Pair Eliminates Common-Mode Noise — The primary purpose of twisting CAN High and CAN Low together is electromagnetic interference rejection. Any external RF field, ignition noise, or electrical transient induces equal noise voltage into both wires of the twisted pair simultaneously. Because the CAN receiver reads only the DIFFERENCE between CAN High and CAN Low, and the noise is equal on both wires, the noise cancels out in the differential measurement — preserving signal integrity in the high-noise automotive environment.

24. B — Internal TCM CAN Transceiver Failure — U0073 Bus Off stored only in the TCM with normal bus resistance, normal TCM power/ground, and all other modules communicating confirms the fault is internal to the TCM. When the bus fault is isolated to a single module with all external network parameters normal, the module's own CAN transceiver circuit has failed — the module is detecting Bus Off because it cannot communicate through its own internal circuit.

25. C — Scan Tool or Connection Fault — DLC power at 12.6V, DLC ground at 0.1V (within acceptable range), and CAN bus resistance at 60 ohms confirm all vehicle-side OBD communication prerequisites are met. The inability to communicate is with the scan tool or its connection to the DLC — a faulty scan tool cable, a bent DLC pin, a scan tool that requires initialization, or a scan tool protocol selection mismatch are the most likely causes when the vehicle network is confirmed functional.

26. B — PCM-to-BCM Communication Path Fault — U0140 stored only in the PCM with the BCM communicating normally with all other modules eliminates a BCM power or global communication fault. The PCM is not receiving BCM messages specifically. A fault in the communication path between the PCM and BCM — whether a break in a dedicated communication circuit, a gateway module fault, or a star-point connection fault — produces communication loss in one direction without affecting the BCM's other network connections.

27. D — Module Reinitialization U-Codes — When all modules lose power simultaneously during a battery replacement without a memory saver, all modules reinitialize from scratch when power is restored. During the simultaneous power-up sequence, modules may transmit initialization messages before the CAN bus is fully established, creating brief communication conflicts. The resulting U-codes often clear on subsequent drive cycles once all modules reestablish normal synchronized communication.

28. B — Module Forcing Dominant Bit — A module with a failed CAN transceiver that is stuck in the transmit-dominant state continuously forces CAN High high and CAN Low low (the dominant bit voltage levels of 3.5V and 1.5V). No other module can transmit because the bus appears permanently occupied. This condition — a module holding the bus in a constant dominant state — is the Bus Off condition and prevents all network communication despite normal bus termination resistance.

29. B — TCM Confirmed as Bus Off Source — Disconnecting modules one at a time while monitoring bus activity is the correct diagnostic technique for identifying which module is causing Bus Off. When disconnecting the TCM immediately restores normal bus communication, the TCM is confirmed as the fault source. Either the TCM's internal CAN transceiver has failed and is forcing the bus offline, or the TCM branch circuit has a fault that was relieved by connector disconnection — branch circuit wiring should be verified before ordering a replacement module.

30. B — Additional Resistance Path Below 60 Ohms — CAN bus resistance below 60 ohms indicates a partial short between CAN High and CAN Low, or an additional unintended parallel resistance path has been added to the network. A resistance of 40 ohms could result from a third 120-ohm path in parallel with the two correct terminating resistors (three 120-ohm resistors in parallel = 40 ohms) — possibly from an incorrectly wired aftermarket module or a wiring splice contacting the opposite bus wire.

31. B — CAN High Short to Ground — CAN High contacting a ground wire creates a direct short from CAN High to chassis ground. This pulls CAN High voltage toward 0V, collapsing the normally variable CAN High voltage and eliminating the differential between CAN High and CAN Low. With both lines at near-zero volts and no differential possible, all modules detect Bus Off simultaneously. Near-zero resistance between CAN High and ground would be measured at the fault location.

32. B — Dual CAN Bus Architecture — Many vehicles use multiple CAN bus networks operating at different speeds for different systems. A high-speed powertrain CAN bus (PCM-TCM) and a medium-speed body CAN bus (PCM-BCM-accessories) may operate independently. The PCM participates in both networks. A fault in the PCM's body bus connection leaves it online on the powertrain bus (TCM communicates) while appearing offline on the body bus (all body/accessory modules report U0100).

33. C — Scan Tool Compatibility Issue — When all modules are present and communicating but specific PIDs show "no data" without any U-codes, the issue is with the scan tool's software database or protocol access — not the vehicle network. Some PIDs require manufacturer-specific enhanced access modes beyond generic OBD II. Some vehicle configurations genuinely do not support certain PIDs. Some scan tool databases simply do not include all PIDs for all vehicle configurations.

34. B — Alternator AC Ripple — An RPM-related whine through the speaker system is the classic symptom of alternator AC ripple contaminating the vehicle's electrical system. A failing alternator with one or more failed diodes allows AC voltage to pass into the DC electrical system. This AC ripple is audible through speaker systems as a whine that directly tracks engine RPM. This is an alternator diagnosis issue — not a CAN bus or audio module communication fault.

35. C — Incompatible Aftermarket Module on CAN Bus — An aftermarket remote start module with a CAN bus interface that has incorrect termination, incorrect voltage levels, or is configured for a different CAN protocol can disrupt bus communication when connected. The timing correlation — Bus Off beginning immediately after the installation — combined with no pre-existing fault history directly implicates the remote start module as the Bus Off source.

36. B — Second Independent CAN Bus Fault — After repairing the confirmed CAN High-to-CAN Low short, the 60-ohm resistance reading confirms the original short is resolved. The return of Bus Off with correct bus resistance indicates a different fault — possibly an intermittent short that was masked by the original hard short, a module that was damaged during the original Bus Off event and is now forcing the bus offline, or a separate harness segment with a vibration-induced intermittent fault.

37. C — Cluster CAN Branch Circuit or Internal Transceiver Fault — PCM communicating normally with the scan tool and all other modules confirms the PCM and main bus are functional. Confirmed normal cluster power/ground and 60-ohm bus resistance eliminate power and termination faults. The fault is specific to the instrument cluster's network connection — either a break or corrosion in the cluster's branch circuit from connector to main backbone, or an internal cluster CAN transceiver failure.

38. A — Normal CAN Bus Recessive State — Both CAN High and CAN Low at 2.5V with no differential is the correct recessive state for an active but idle CAN bus. When no module is transmitting, the bus rests at the 2.5V common-mode midpoint. This is the baseline condition that the bus returns to between message frames. During active communication, CAN High rises and CAN Low drops from this midpoint.

39. D — Water Bridging CAN High to CAN Low — Water intrusion into a connector creates a low-resistance electrical path between adjacent terminals. If the CAN High and CAN Low terminals are adjacent in the connector and water bridges them, the result is a direct CAN High-to-CAN Low short — functionally identical to a wiring short and producing the same Bus Off condition across all network modules. Drying and cleaning the connector or replacing it resolves this fault.

40. B — Dual Network Architecture — U0073 stored in three modules but not in two others indicates the three affected modules share one network segment and the two unaffected modules share a different segment. Modern vehicles often have separate CAN networks for different vehicle systems — a powertrain/chassis high-speed bus and a body medium-speed bus. A fault on one bus

segment affects only the modules on that segment while the other segment continues operating normally.

41. A — Partial Wire Break — A CAN bus wiring segment measuring 4.2 ohms versus less than 0.5 ohms on all others indicates significantly elevated resistance in that specific segment. This is characteristic of a partial wire break — a wire with broken strands maintaining marginal electrical contact at the break point. The elevated resistance causes signal degradation that may be intermittent under vibration or thermal stress, generating intermittent communication faults that worsen as the break progresses.

42. B — Module or Branch Circuit Confirmed — Disconnecting the left body zone module restoring normal bus activity confirms that module's connection is the source of the Bus Off. The technician should inspect the branch circuit wiring at the module connector before condemning the module — a short on the branch circuit wiring relieved by connector disconnection is the first thing to rule out. If the branch circuit wiring is clean, the fault is internal to the module's CAN transceiver circuit.

43. C — Incompatible Replacement PCM Configuration — A salvage PCM from a different trim level may have a different CAN bus configuration — different network speed, different message IDs, a different or missing terminating resistor, or different protocol settings. When connected to a bus configured for a different specification, the incompatible PCM can disrupt communication for all other modules. OEM replacement PCMs or salvage PCMs from the identical vehicle trim level and model year are required to ensure protocol compatibility.

44. A — PCM on Diagnostic Line Only — Many vehicles provide scan tool access to the PCM through the K-Line or a dedicated diagnostic CAN circuit that is separate from the main vehicle CAN bus. If the PCM's main CAN bus connection has failed, the PCM may still be accessible via the diagnostic line while being completely offline on the main vehicle network. All other modules report U0100 because the PCM is not transmitting on the main bus even though it responds to scan tool requests.

45. B — CAN High Short to Ground — Near-zero resistance (3.2 ohms) between CAN High and chassis ground confirms CAN High is shorted to ground at some point in the network. CAN High shorted to ground pulls CAN High voltage toward 0V — collapsing its ability to rise to 3.5V during dominant bits. Without CAN High rising above 2.5V, no voltage differential can be established between CAN High and CAN Low, preventing all module communication and causing Bus Off across the network.

46. C — Temperature-Sensitive Intermittent Fault — A CAN bus fault that occurs only when fully warmed up and is absent when cold is characteristic of a thermally-sensitive intermittent connection fault. As temperatures rise, thermal expansion can open a marginal connection, soften wire insulation allowing a chafed wire to contact another circuit, or cause a connector with

marginal terminal retention to lose contact. These faults disappear when the vehicle cools and the connection restores.

47. C — New Scan Tool Setup Issue — DLC power at 12.6V, correct grounds, and 60-ohm CAN bus resistance confirm the vehicle network is functioning normally. A new scan tool that cannot communicate while an established shop scan tool communicates successfully on the same vehicle indicates a scan tool issue — incorrect protocol selection for the vehicle, need for software update, or incomplete initialization procedure. The vehicle network is confirmed functional.

48. C — Collision Severed Bus Backbone or Isolated PCM — A 120-ohm resistance instead of 60 ohms after a collision confirms one terminating resistor has been disconnected from the network. The PCM often contains one of the two CAN bus terminating resistors in its internal circuitry. A collision that severs the PCM's CAN bus wiring or physically displaces the PCM removes its internal terminating resistor from the network — producing 120 ohms at the DLC and generating U0100 in all modules that share the bus segment with the PCM.

49. B — Intermittent Wiring Fault Revealed After Module Replacement — A common scenario in CAN bus diagnosis is that a dominant module fault (one module forcing Bus Off) can mask an intermittent wiring fault that would otherwise be too brief to cause consistent Bus Off. After the primary module fault is correctly repaired, the intermittent wiring fault — which was previously undetectable under the constant Bus Off condition — begins producing its own periodic Bus Off events. A thorough harness inspection for chafed wires, corroded connectors, and loose terminals is required.

50. C — Intermittent Fault Not Present During Testing — A CAN bus fault that produces U-codes without any detectable fault during diagnosis is the hallmark of a truly intermittent condition that requires specific operating conditions — a particular temperature, vibration frequency, vehicle load, or moisture level — to manifest. Static resistance checks, scope analysis, and module disconnection testing cannot detect a fault that is not currently present. Road testing under conditions that previously triggered the fault, or a connector inspection for marginal terminal retention and moisture ingress, are the most productive approaches.