

PRACTICE EXAM 13: AUTOMOTIVE SERVICE TECHNICIAN (125 QUESTIONS)

Allow four hours. Select one answer, A, B, C or D, for each question. Use the data and assumptions supplied. Complete the paper before reading its answer key. At least 88 correct answers meet a 70% practice threshold; these independent questions are not official examination items.

1. What does a brake booster generally assist where fitted?

- A. Setting every wheel-speed sensor's air gap.
- B. Adjusting tire pressure during braking.
- C. Reducing driver effort needed for the specified brake actuation.
- D. Replacing the need for hydraulic containment.

2. An engine cover repair requires sealant only at identified junctions. What should assembly do?

- A. Add more sealant until it extrudes into the oil gallery.
- B. Coat every internal passage with a thick layer.
- C. Use any adhesive with similar colour.
- D. Apply the specified material only where the procedure directs.

3. After ignition repair, idle misfire disappears, but the original loaded acceleration condition has not been checked. What remains for verification?

- A. Increasing idle speed to represent acceleration load.
- B. The applicable safe loaded-condition test and related evidence.
- C. Acceptance based only on smooth idle.
- D. Automatic replacement of the fuel pump.

4. A door window reverses after glass replacement. The prescribed check identifies tight glass-channel fit at one point, while commanded motor direction and supply are correct. What should be assessed?

- A. The glass and channel installation causing the abnormal load.
- B. Permanent disabling of reversal protection.
- C. An oversized fuse to overcome the channel restriction.
- D. The remote transmitter as the mechanical fit fault.

5. A tire vibration persists after correct balancing. Radial runout exceeds the supplied limit, while the wheel rim's separate check is acceptable. What is supported?

- A. Wheel-rim replacement despite its satisfactory measurement.
- B. Additional balance weight as universal runout correction.
- C. The tire's geometric condition needs assessment.
- D. A brake-bleeding procedure as tire-shape repair.

6. A diesel particulate-filter temperature value remains fixed after warm-up. Independent temperature testing confirms a change, and the approved harness substitution changes module data correctly. What should be assessed?

- A. The temperature sensor and its local connection.
- B. Filter replacement solely from the fixed indicated value.
- C. A forced regeneration as sensor-accuracy repair.
- D. Module replacement despite correct response to substitution.

7. A supplied brake inspection finds pad thicknesses of 8, 7, 6 and 5 mm. What arithmetic mean thickness results?

- A. 3 mm.
- B. 13 mm.
- C. 6.5 mm.
- D. 26 mm.

8. A temporary engine support shifts as a transmission mount is loosened. The engine's remaining support points are not verified. What should happen?

- A. Continue because the mount bolts are almost removed.
- B. Tighten only the opposite mount to absorb the shift.
- C. Have a helper hold the engine by its cover.
- D. Stop and establish the approved stable support arrangement.

9. A gasoline fuel-pressure diagnostic procedure calls for verifying gauge accuracy against an approved reference. What should testing do?

- A. Accept any reading if the engine still runs.
- B. Verify the gauge before comparing readings with the vehicle limit.
- C. Use only the gauge's maximum scale value.
- D. Adjust the limit to match the unverified gauge.

10. A diesel exhaust-temperature sensor repair requires a specified routing away from a hot moving interface. What should be restored?

- A. Only the sensor's thread engagement.
- B. The approved harness protection and sensor verification.
- C. Only present electrical continuity.
- D. An arbitrary longer wire route near the same contact.

11. A steering-angle value is offset, and a prescribed mechanical-centre check finds the rack assembled off its reference after repair. What should be corrected first?

- A. Changing tire pressure to offset the angle.
- B. Replacing the sensor without checking the assembly.
- C. Calibration used to conceal the wrong physical reference.
- D. The specified mechanical centring before required calibration.

12. A hybrid starts its engine unexpectedly during a service observation while its ready state remains enabled. The procedure required a disabled state for that task. What needs correction?

- A. Assuming engine silence proves disabled propulsion.
- B. Only disconnecting an ignition coil while ready remains enabled.
- C. The authorized vehicle state and energy controls before work continues.
- D. Removing a warning label to avoid distraction.

13. A new motor restores speed, but the original binding linkage remains and current still exceeds the supplied limit. What should completion address?

- A. Correct the mechanical load and verify the complete operating condition.
- B. Lowering warnings without repairing the linkage.
- C. A larger fuse to allow the same abnormal current.
- D. Acceptance because motor replacement changed the symptom.

14. A shaft rotates at 1,800 rpm. Using $\text{frequency} = \text{rpm}/60$ for one revolution per event, what frequency is calculated?

- A. 30 Hz.
- B. 180 Hz.
- C. 108,000 Hz.
- D. 0.033 Hz.

- 15.** A supplied gearset has driven gear 54 teeth and driving gear 18 teeth. What reduction ratio results?
- A. 36:1.
 - B. 72:1.
 - C. 3:1.
 - D. 0.333:1.
- 16.** A repaired power circuit operates normally, but its fuse was previously replaced with an oversized unapproved unit. What must be restored?
- A. Retention of the larger fuse because the load now runs.
 - B. A second larger fuse in parallel.
 - C. An unprotected jumper as permanent power supply.
 - D. The specified protection after resolving and verifying the fault.
- 17.** A seat-heater complaint affects one cushion. Its controller command is present, and the specified isolated continuity test finds an open heating element there. What is best supported?
- A. Battery registration as element-continuity repair.
 - B. The identified element and related connection need assessment.
 - C. The shared switch is proved faulty by one open element.
 - D. Every seat controller must be replaced.
- 18.** A replacement hub has the correct mounting shape. What else should selection verify where a speed target is integrated?
- A. Only the bearing's external mounting dimensions.
 - B. The assumption that mounting fit proves electronic compatibility.
 - C. Its complete application and specified signal-target configuration.
 - D. Only the hub's mechanical rotation without a signal check.

19. Two resistances of 3 and 5 ohms are stated to be in series. What total resistance results?

- A. 2 ohms.
- B. 8 ohms.
- C. 15 ohms.
- D. 1.875 ohms.

20. A service measurement is 0.075 mm. With 1 mm = 1,000 μm , what is the equivalent value?

- A. 0.000075 μm .
- B. 750 μm .
- C. 7.5 μm .
- D. 75 μm .

21. Charging stops when a specified inlet temperature input reads abnormally high. Independent measurement is normal, and approved substitution restores the required charge request. What is best supported?

- A. The temperature-input path needs diagnosis before assigning charger failure.
- B. The onboard charger is necessarily defective.
- C. Increasing charging current to override protection.
- D. Battery replacement despite a normal independently measured temperature.

22. A brake-cleaning product is to be sprayed near a welding operation. What should the technician check?

- A. Only skin-contact precautions without fume assessment.
- B. Only how quickly the spray dries.
- C. Chemical suitability and hot-work exposure controls.
- D. Only evaporation rate without heat-exposure review.

23. A programming recovery procedure is available after an interrupted update. What should the technician do?

- A. Disconnect power repeatedly to clear the interruption.
- B. Preserve error information and follow the applicable recovery sequence.
- C. Install an unverified software file with the same name.
- D. Repeat random updates from similar modules.

24. A communication complaint appears whenever an added charger is connected. Scope testing shows interference on a nearby harness, and relocating the charger wiring using the approved arrangement removes the disturbance. What is supported?

- A. The added wiring arrangement contributed to signal interference.
- B. Every original module is necessarily defective.
- C. A software update is the proven physical routing repair.
- D. The battery capacity changed the bus pin assignments.

25. A compressor failure contaminates the refrigerant circuit. What should replacement planning include?

- A. Using normal operation to carry particles into the new unit.
- B. Only fitting another compressor.
- C. Only adding extra lubricant to dilute debris.
- D. The specified cleaning or replacement of affected connected components.

26. A powered-hatch binding repair is completed. What should verification include?

- A. Only clearing the code without testing loaded motion.
- B. Disabling automatic operation permanently.
- C. Full travel, load response and protective functions.
- D. Only one unloaded movement short of the original bind.

27. A brake pedal is hard with the engine running. The specified booster supply test fails, but the mechanical pedal linkage moves freely. What should be localized?

- A. The assist supply and booster-related diagnostic path.
- B. Pad wear alone as proof of failed assist supply.
- C. An air leak in a tire as the pedal-force cause.
- D. The free linkage as conclusively seized.

28. A cable loses 0.15 V at a stated 20 A. Using $R = V/I$, what effective resistance does this measurement imply?

- A. 133.3 ohms.
- B. 3 ohms.
- C. 0.75 ohm.
- D. 0.0075 ohm.

29. After an axle-mount repair, the support is secure but the shaft contacts a nearby shield during prescribed suspension travel. What remains?

- A. Acceptance from secure fasteners alone.
- B. Resolve the movement clearance and verify the full installation.
- C. Increasing lubricant fill to reduce contact.
- D. Removing the shaft's balance weights for clearance.

30. A new purge valve fits but fails the supplied closed-state leak check before installation. What is appropriate?

- A. Install it because its connector matches.
- B. Increase commanded duty to compensate for closed leakage.
- C. Clear evaporative codes as bench-test acceptance.
- D. Resolve its suitability or condition rather than install a failed component.

31. An accessory runs slowly. Voltage directly across its connected motor meets the supplied requirement, but current is above its specified range and the driven mechanism binds. What should be assessed?

- A. Controller replacement before checking the bound mechanism.
- B. The mechanical load and motor condition under the procedure.
- C. A feed open despite correct loaded terminal voltage.
- D. A larger fuse as friction correction.

32. A relay coil is commanded and clicks, but contact output loses most supply voltage under load. Voltage remains normal at the input contact. What is best supported?

- A. The loaded relay-contact path has excessive resistance.
- B. The click proves the entire relay is satisfactory.
- C. The control request must be absent.
- D. The ground at an unrelated sensor causes contact input loss.

33. A node briefly resets at the same time its ground potential rises during a high-current accessory event. The network waveform elsewhere remains normal. What should be investigated?

- A. A whole-network termination failure as the only cause.
- B. The reset node's software solely from its temporary absence.
- C. The node's shared return path under that load.
- D. The diagnostic cable despite a captured local ground disturbance.

34. An EV travels 200 km using a stated 32 kWh. What normalized consumption results?

- A. 160 kWh/100 km.
- B. 64 kWh/100 km.
- C. 16 kWh/100 km.
- D. 6.25 kWh/100 km.

35. A gateway is reachable, but modules on one downstream bus are absent. Their shared supply is stable, and the downstream gateway connection has a confirmed open conductor. What is best supported?

- A. Assume gateway access proves every downstream connection is intact.
- B. Repair the localized downstream path and verify that segment.
- C. Replace the reachable gateway without path testing.
- D. Replace all powered modules independently.

36. An ignition pulse repeats every 25 ms under the stated simple count model. Using frequency = 1/time in seconds, what pulse frequency results?

- A. 400 Hz.
- B. 0.04 Hz.
- C. 25 Hz.
- D. 40 Hz.

37. A relay-contact fault is repaired by installing the specified replacement. What should verification include?

- A. Loaded output, control response and the original function.
- B. Clearing the complaint without operating the load.
- C. Only hearing the new relay click.
- D. Only checking its case dimensions.

38. A tire pressure is 225 kPa against a supplied 250 kPa target at the specified condition. What increase is required?

- A. 475 kPa.
- B. 0.025 kPa.
- C. 12.5 kPa.
- D. 25 kPa.

39. A diesel intake restriction is corrected by replacing a damaged duct. What should installation verify?

- A. Additional tape as qualification for an incorrect duct.
- B. Specified routing, collapse resistance, sealing and airflow checks.
- C. Only securing one end of the connection.
- D. Only matching the duct's outside appearance.

40. A specified bracket uses four 9 mm spacing pieces in the given stack. What total spacing results?

- A. 13 mm.
- B. 81 mm.
- C. 36 mm.
- D. 2.25 mm.

41. Several sensors report implausible values together. They share a reference feed, and disconnecting a prescribed branch containing a short restores the reference and other readings. What is supported?

- A. The isolated branch loads the shared reference circuit.
- B. A higher reference-voltage setting as normal repair.
- C. Independent replacement of every sensor.
- D. Battery capacity as the only measured reference fault.

42. An engine will be run indoors for a loaded diagnostic test. What must the setup include?

- A. The approved exhaust-extraction and exposure controls.
- B. Only positioning a fan toward the vehicle's grille.
- C. Only a partially opened shop door.
- D. Only turning off cabin recirculation.

43. A diesel has low power with normal rail pressure. Commanded boost is appropriate, but the intake restriction exceeds its supplied limit before the turbocharger. What should be addressed first?

- A. Injector coding as restriction removal.
- B. A larger turbocharger without correcting the inlet path.
- C. High-pressure pump replacement despite normal rail pressure.
- D. The demonstrated inlet restriction and its cause.

44. A calibration reference reads correctly with one meter lead set but incorrectly with another. The meter itself remains unchanged. What should be investigated first?

- A. Assuming display resolution caused the lead-dependent change.
- B. Adjustment of every vehicle specification.
- C. The second leads, connections and measurement setup.
- D. Automatic replacement of the known reference.

45. A vehicle's air suspension can level automatically after key-off. A technician plans to work between its body and suspension. What risk must preparation control?

- A. Only the current measured ride height.
- B. Unexpected height change and stored suspension energy.
- C. Only the vehicle's parking brake position.
- D. Only the switched-off instrument display.

46. Why should an induced communication code be distinguished from the original complaint?

- A. Every induced code proves another module has failed.
- B. Any original code must be ignored after testing.
- C. Induced codes erase the need to verify the repair.
- D. A diagnostic disconnection can create expected secondary fault evidence.

47. A service instruction specifies 610 g refrigerant charge. Recorded recharge is 560 g. What difference remains to the stated target?

- A. 0.05 g.
- B. 610 g.
- C. 50 g.
- D. 1,170 g.

48. A circuit blows its fuse after a recently installed accessory is switched on. Measured accessory current exceeds the circuit's supplied rating, and the installation differs from the approved design. What is required?

- A. Resolve the accessory load and authorized circuit arrangement.
- B. Add another load to divide the current.
- C. Replace the original switch solely because protection opens.
- D. Install a larger fuse without redesign.

49. A manual gearbox jumps out of one gear under load. Clutch release and external linkage meet their tests, but the supplied inspection finds damaged engagement teeth for that gear. What is best supported?

- A. A clutch master cylinder is proved faulty despite normal release.
- B. The localized engagement components need assessment.
- C. A tire-size change as the tooth-damage remedy.
- D. The starter circuit as the load-dependent engagement cause.

50. A driveline assembly needs 1.6 L of specified fluid. The measured addition is 1.25 L. What additional quantity reaches the stated amount?

- A. 2.85 L.
- B. 0.035 L.
- C. 0.35 L.
- D. 0.8 L.

51. A circuit's stated load current is 4 A and its supply is 13 V. Using $P = V \times I$, what load power is calculated?

- A. 52 W.
- B. 17 W.
- C. 3.25 W.
- D. 0.308 W.

52. What does a node's wake-up requirement determine within its vehicle strategy?

- A. The condition establishing identical power use by all nodes.
- B. Conditions permitting the node's required active state.
- C. The reset that automatically repairs an open data wire.
- D. The state that guarantees every message is valid.

53. One front brake pad wears faster than its mate. The applicable inspection finds the caliper cannot slide freely, while piston return meets its check. What needs assessment?

- A. The master cylinder as the only cause despite normal piston return.
- B. All brake hoses as proved restricted.
- C. ABS software as the mechanical slide repair.
- D. The caliper sliding interfaces and pad support condition.

54. After brake-system service, a supplied procedure requires verifying pedal reserve and leak integrity before a road test. What should be done?

- A. Only fill the reservoir and proceed.
- B. Complete those readiness checks before the operating test.
- C. Use the road test to discover basic hydraulic readiness.
- D. Delay connection checks until the customer reports a problem.

55. What does a high-voltage interlock generally help the vehicle monitor?

- A. Required connection or access states in the interlock path.
- B. Individual cell balancing during every charging cycle.
- C. Direct regulation of charger output voltage and current.
- D. Direct measurement of each cell's chemical condition.

56. A brake diagnosis requires checking both pressure release and mechanical freedom. Why should both be examined?

- A. One hot wheel always proves a failed controller.
- B. A pressure check always proves every slide is free.
- C. Mechanical freedom guarantees every upstream valve releases pressure.
- D. Drag can arise through different hydraulic and mechanical paths.

57. A wheel repair meets balance requirements, but inspection finds a cracked mounting area outside the supplied acceptance criterion. What must be done?

- A. Add balance weight over the crack.
- B. Increase wheel-fastener torque to close the defect.
- C. Disposition the structural defect before return to service.
- D. Release it because balance is satisfactory.

58. An engine overheats after a thermostat change. The replacement's documented flow arrangement differs from the application, and cooling-system tests identify inadequate circulation through that location. What should be verified?

- A. Only replacing the temperature indicator.
- B. Only increasing coolant concentration.
- C. Correct thermostat applicability and installed flow path.
- D. A larger cooling fan as universal flow correction.

59. A supplied EV cooling recipe requires 10 L of 30% concentrate mixture, ignoring contraction. What concentrate volume is required?

- A. 7 L.
- B. 3 L.
- C. 33.33 L.
- D. 0.3 L.

60. A steering-rack installation procedure requires specified harness clearance through full steering travel. What should verification do?

- A. Only inspect with the wheels straight.
- B. Route the harness against a moving shaft to hold it still.
- C. Only verify the rack's part number.
- D. Check the complete travel and restore all required retention and clearances.

61. A specified tightening process has stages of 40 and 90 N·m. What numerical increase occurs between them?

- A. 50 N·m.
- B. 3,600 N·m.
- C. 2.25 N·m.
- D. 130 N·m.

62. A scan-tool test requires a particular control-module software level. The installed tool cannot support that function. What should the technician do?

- A. Use verified compatible equipment or the authorized alternative procedure.
- B. Update vehicle software solely to suit the inadequate tool.
- C. Enter values from a similar model manually.
- D. Interpret an unsupported display as a passed test.

63. A driveline squeak occurs with shaft rotation. The specified inspection finds a universal joint binding through one part of its travel, although free play is not excessive. What should diagnosis recognize?

- A. A larger tire diameter repairs joint movement.
- B. The differential ratio must be incorrect.
- C. Absence of play proves every joint function is acceptable.
- D. The joint can be defective through binding despite limited play.

64. A binding universal joint is replaced. What should installation verify?

- A. Only that the new joint has no visible rust.
- B. Specified bearing fit, retention, phasing and free travel.
- C. Only the shaft's painted length.
- D. Extra force on the caps as freedom-of-movement proof.

65. A steering wheel remains off centre after alignment. Total toe passes, but individual toe and steering-centre checks fail their supplied criteria. What is supported?

- A. Increasing tire pressure will centre the steering gear.
- B. Total toe alone proves every alignment requirement is satisfied.
- C. The complete alignment and centring relationship needs correction.
- D. A wheel-bearing replacement is necessarily indicated.

66. A transmission range-sensor repair requires adjustment in a specified selector position. What should completion do?

- A. Establish that position, adjust as directed and verify every required range.
- B. Use one correctly displayed range as universal acceptance.
- C. Align it visually in any convenient position.
- D. Only clear the displayed range code.

67. An anti-roll link is replaced after localized looseness. What should assembly verify?

- A. Only that it can be bolted at one end.
- B. Specified hardware, position, retention and free suspension movement.
- C. Only that the link's overall colour matches.
- D. Extra compression of the bushings without instructions.

68. Cooling deteriorates after a condenser is partly covered by an accessory. Compressor command is normal, and removing the obstruction restores the specified performance. What is supported?

- A. A new compressor is proved necessary despite recovery.
- B. The blend door is necessarily seized.
- C. The refrigerant identity changed with the accessory removal.
- D. Reduced condenser airflow contributed to the complaint.

69. A wheel-speed indication is consistently lower than the others after hub replacement. Signal pulses are clean, but the installed target has a different tooth count from the supplied application. What should be verified?

- A. Brake-fluid bleeding as pulse-count correction.
- B. The controller as defective because pulses are present.
- C. Correct hub and target applicability.
- D. The sensor power feed as proved absent.

70. A caliper slide repair restores movement, but the pad-support clips remain deformed outside their supplied criterion. What should be resolved?

- A. Grinding every new pad without approved dimensions.
- B. Acceptance because the slide is now free.
- C. The support hardware and completed pad movement condition.
- D. Higher pedal force as hardware repair.

71. A repaired EV charging inlet requires checking the specified mechanical locking function. What should acceptance verify?

- A. Tape securing the cable as permanent locking.
- B. Correct connection retention and required charging-control response.
- C. Only the inlet's exterior fit.
- D. Only that the indicator illuminates.

72. What does a valve spring principally do in its intended valve-train arrangement?

- A. Automatically establish every valve-lash specification.
- B. Set valve-seat contact angle during every cycle.
- C. Meter all oil flow through the camshaft bearing.
- D. Provide the designed return force for valve movement.

73. A seat-heater element is replaced after a verified open. What should completion assess?

- A. Specified installation, temperature control and related electrical operation.
- B. Only that continuity now exists.
- C. Only the upholstery's appearance.
- D. Direct permanent power without the required controller.

74. A module receives correct network messages, but its reported physical sensor value is wrong at the source and at every receiving module. What is the supported next focus?

- A. Terminator replacement to change the physical sensor value.
- B. The gateway as proved faulty despite matching source data.
- C. The source measurement and its local input path.
- D. Independent replacement of every receiving module.

75. Why should wheel fasteners be tightened with the specified method and pattern?

- A. To use maximum tool output regardless of specification.
- B. To replace inspection of damaged threads.
- C. To eliminate every future wheel vibration automatically.
- D. To establish the intended joint loading and assembly condition.

76. What does an ignition coil primarily provide within its designed ignition system?

- A. The voltage transformation required for spark generation.
- B. The detection of combustion pressure in each cylinder.
- C. The direct measurement of camshaft position for timing.
- D. The physical adjustment of spark-plug electrode gap.

77. The range display says drive while the selector is in reverse. Independent linkage inspection shows the transmission lever reaches reverse, but the range-input value remains drive. What should be examined?

- A. The reverse clutch as the proven display-input cause.
- B. The range-sensing path and its specified alignment.
- C. The torque converter's lockup surface as range identification.
- D. The final-drive gears because reverse is selected.

78. A HVAC temperature-door feedback changes normally, but physical inspection shows its detached linkage leaves the door stationary. What should diagnosis distinguish?

- A. Actuator feedback from actual driven-door movement.
- B. A larger evaporator as mechanical connection repair.
- C. Refrigerant pressure as linkage-position measurement.
- D. Feedback change as proof that the door moves.

79. A starter fails intermittently when hot. During the fault its main supply and control voltage meet specifications, and the prescribed current check indicates an internal open. What should be localized?

- A. The start-request switch despite verified control voltage.
- B. Wheel alignment as the heat-dependent starting load.
- C. The starter's internal electrical path under the applicable test.
- D. A battery feed loss despite verified supply.

80. A stated tire circumference is 2.1 m. Under a simple no-slip model, what distance corresponds to 100 wheel revolutions?

- A. 2.1 m.
- B. 210 m.
- C. 2,100 m.
- D. 47.62 m.

81. A module communication check requires verifying the actual vehicle equipment list. Why is that necessary?

- A. To replace the gateway if an optional node is absent.
- B. To select any module with the same connector.
- C. To assume every advertised option is installed.
- D. To distinguish an unfitted option from a missing expected node.

82. After glass-channel correction, the procedure requires window endpoint initialization. What should repair complete?

- A. Only manually closing the glass once.
- B. Only comparing closed-glass height without control checks.
- C. Removing the endpoint requirement from the work order.
- D. The applicable initialization and full movement or reversal checks.

83. A supplied valve-clearance range is 0.20–0.25 mm. Measurement is 0.16 mm. How far below the minimum is it?

- A. 0.4 mm.
- B. 0.36 mm.
- C. 0.04 mm.
- D. 0.09 mm.

84. Fuel correction is strongly negative after refuelling. The purge valve passes vapour while commanded closed, and the prescribed sealing test fails. What is a supported next focus?

- A. A lean intake leak as the demonstrated rich contribution.
- B. The purge-valve sealing fault and its operating effect.
- C. Immediate injector replacement without separate tests.
- D. The fuel-pressure gauge as the vapour leakage source.

85. A carbon-tracked ignition boot is replaced after inspection. What should repair also assess?

- A. Related plug, coil interface and contamination sources.
- B. Only boot fit without inspecting the plug interface.
- C. Increasing plug gap to match the previous wear.
- D. Only clearing counts without checking loaded operation.

86. Two adjacent cylinders have low compression. During the prescribed leak-down test, air passes between their plug openings, while intake and exhaust checks do not identify the main loss. What needs assessment?

- A. The radiator fan as proof of compression loss.
- B. The sealing boundary between those cylinders.
- C. The two ignition coils as the air-transfer path.
- D. The air filter as the adjacent-cylinder seal.

87. A seal replacement is planned for an axle with a blocked vent and repeated pressure-related seepage. What should repair include?

- A. Sealing the vent more tightly to prevent entry.
- B. Using extra lubricant above the specified level.
- C. Only replacing the seal without checking the vent.
- D. Restore vent function and assess the actual sealing interfaces.

88. A shaft's permitted end play is 0.10–0.16 mm and its measured value is 0.22 mm. How far above the maximum is it?

- A. 0.06 mm.
- B. 0.12 mm.
- C. 0.6 mm.
- D. 0.38 mm.

89. An electrified vehicle reports isolation loss only when one auxiliary HV component is connected. Prescribed separate checks locate the fault within that component, while the remaining system passes. What is supported?

- A. Bypass isolation monitoring to retain the auxiliary function.
- B. Replace the entire traction battery without localization.
- C. Assess the localized component under the HV diagnostic process.
- D. Declare the fault imaginary because other sections pass.

90. Where does an automotive condenser reject heat in a normal cooling cycle?

- A. To the air flowing across its heat-exchanger surfaces.
- B. Directly into the cabin supply air by design.
- C. Back into the compressor motor without external transfer.
- D. Only into engine oil through the sump.

91. An obstructed condenser accessory is relocated using the approved installation. What should repair verify?

- A. Only clearing cooling-system history.
- B. Required airflow clearances and HVAC performance under comparable conditions.
- C. Only that the accessory remains attached.
- D. Reducing compressor command to hide the airflow effect.

92. What does a straightedge used with the specified gauges principally help assess on a cylinder head?

- A. Injector pulse duration during cranking.
- B. Camshaft electrical signal amplitude.
- C. Surface flatness at the prescribed inspection paths.
- D. Coolant chemical concentration inside the jacket.

93. A gasoline misfire occurs under load. Coil command is present, and inspection finds a carbon-tracked boot and an out-of-range plug gap in the affected ignition path. What should be assessed?

- A. The fuel injector as proved faulty without delivery tests.
- B. The oxygen sensor as the track's cause.
- C. The engine mount as the spark-gap correction.
- D. The complete coil, boot and spark-plug circuit condition.

94. A supplied engine balance calculation uses highest cylinder contribution 92 units and lowest 74 units. What measured spread results?

- A. 166 units.
- B. 18 units.
- C. 9 units.
- D. 1.8 units.

95. What does a position-feedback input in a body actuator generally represent?

- A. The sensed actuator or driven-component position assigned by the design.
- B. A guarantee that every linkage remains connected.
- C. The permanent physical state of every vehicle door.
- D. The exact current through all unrelated accessories.

96. After valve work, one valve has clearance below the supplied minimum at the prescribed checking condition. The assembly otherwise turns freely. What must be resolved?

- A. Changing oil viscosity instead of the adjustment.
- B. Acceptance because hand rotation is free.
- C. The measured valve clearance under the applicable adjustment procedure.
- D. Increasing engine speed to create running clearance.

97. Why is an approved sealed connector repair different from merely covering exposed wires?

- A. It permits any terminal arrangement if water is excluded.
- B. It eliminates every need for a loaded test.
- C. It changes all modules to the same software.
- D. It restores specified electrical contact, retention and environmental protection.

98. A powered hatch reverses near one travel point. Current rises there, and the prescribed mechanical inspection finds binding at that location with obstacle sensors otherwise passing. What is supported?

- A. A larger fuse to prevent reversal.
- B. The local mechanical load needs correction and verification.
- C. Disabling obstacle response as the binding repair.
- D. All sensing components are faulty despite passed checks.

99. A replacement module is configured correctly but repeatedly resets during the prescribed verification. A repaired feed still drops below its supplied minimum under load. What remains?

- A. Replacement of every network receiver.
- B. Further programming as automatic power-path repair.
- C. Acceptance because configuration is complete.
- D. Correct the supply fault and repeat valid module verification.

100. What does a current probe around one injector feed conductor observe when suitably configured?

- A. Current behaviour in that feed circuit over the measured interval.
- B. Cylinder sealing pressure at top dead centre.
- C. Fuel spray pattern directly inside the cylinder.
- D. Mechanical injector-nozzle hole diameter.

101. A battery replacement procedure requires registration of the installed type and capacity. What should completion include?

- A. Only clearing the clock display.
- B. Only measuring case size.
- C. The applicable registration and required charging-system checks.
- D. Entering another battery's data to finish quickly.

102. An auxiliary HV component is replaced after verified isolation failure. What should completion follow?

- A. Direct energization before inspecting connections.
- B. The specified reassembly, isolation and functional verification sequence.
- C. Only removing the warning from memory.
- D. Only matching connector colour.

103. An automatic transmission shows foamed fluid after service, and its level exceeds the supplied maximum at the required checking state. Shift pressure fluctuates with the symptom. What should be addressed first?

- A. Install a larger control solenoid before level correction.
- B. Ignore the required check state because the engine runs.
- C. Correct the verified fluid-level condition and reassess operation.
- D. Increase fill further to eliminate foam.

104. A diagnostic event lasts 80 ms. With 1 second = 1,000 ms, what duration in seconds is recorded?

- A. 0.08 s.
- B. 80,000 s.
- C. 0.8 s.
- D. 8 s.

105. A direct-injection gasoline line replacement requires particular single-use hardware in the supplied instructions. What should assembly use?

- A. A generic hose with matching bore.
- B. External sealant as single-use part renewal.
- C. The removed hardware tightened farther.
- D. The specified new components and complete pressure-system procedure.

106. A body warning appears after windshield work. A sensor connection has been left open, and the applicable module input follows an approved substitution normally. What should be localized?

- A. A tire-pressure adjustment as the open-connection repair.
- B. The disturbed sensor connection and associated circuit.
- C. Replacement of the responding module immediately.
- D. An unrelated body actuator from the warning alone.

107. An HVAC pressure measurement is 1.8 MPa. With 1 MPa = 1,000 kPa, what is the equivalent reading?

- A. 18,000 kPa.
- B. 180 kPa.
- C. 0.0018 kPa.
- D. 1,800 kPa.

108. After HV service, the prescribed voltage measurement is inconsistent with the instrument's known-source check. What should the technician do?

- A. Treat the lower reading as proof of safety.
- B. Average both readings to establish zero voltage.
- C. Resolve instrument validity and repeat the approved verification safely.
- D. Open the component to discover the real condition.

109. A damaged network inline connector is replaced. What should repair preserve?

- A. Approved terminal assignments, contact integrity and harness protection.
- B. Only continuity between arbitrary pins.
- C. Only the connector's outer shape.
- D. An unverified pin reassignment to simplify routing.

110. A transmission ratio appears implausible only when its output-speed signal drops to zero during a documented connector dropout. Independent shaft observation shows rotation continues. What should be corrected first?

- A. A higher line-pressure setting as sensor repair.
- B. A different final-drive ratio to match the missing signal.
- C. The output-speed measurement path before interpreting that ratio.
- D. Internal overhaul solely from the computed ratio.

111. A replacement clutch disc has the required diameter but its hub offset conflicts with the supplied assembly orientation. What is necessary?

- A. Verify correct applicability and complete clutch geometry before installation.
- B. Remove hub material to fit without approval.
- C. Accept it from friction diameter alone.
- D. Use the release linkage to absorb the offset.

112. A camera replacement procedure requires identifying the installed mounting bracket and calibration method. What should repair planning do?

- A. Skip calibration if an image appears.
- B. Verify the exact component arrangement and applicable setup requirements.
- C. Use any bracket that holds the camera visibly straight.
- D. Select the procedure from another vehicle with the same screen.

113. A detached temperature-door linkage is repaired. What should completion check?

- A. Only the actuator's unloaded movement.
- B. Only clip fit without checking linked-door travel.
- C. Increasing actuator force beyond specification.
- D. Physical travel, feedback relationship and delivered-air response.

114. A limited-slip axle service check requires identifying its exact design and lubricant specification. What should the technician do?

- A. Verify those requirements before interpreting chatter or servicing fluid.
- B. Assume all limited-slip arrangements use the same procedure.
- C. Add a generic friction modifier to every axle.
- D. Use fluid colour as complete design identification.

115. A branch's communication fails after collision repair. Its repaired conductors are crossed at a connector, and the supplied diagram confirms the intended assignments. What should be corrected?

- A. Battery replacement as terminal-assignment repair.
- B. The original terminators despite the local misconnection.
- C. The identified conductor-to-terminal mismatch and related damage.
- D. Module software solely because data is absent.

116. A suspension knock disappears when the prescribed test restrains a loose anti-roll link. Other checked joints meet their limits. What is best supported?

- A. Replacing all satisfactory ball joints first.
- B. Tire-pressure adjustment as link retention.
- C. A rear differential repair is proved necessary.
- D. The link or its local retention contributes to the knock.

117. A booster-supply repair restores the required assist reading, but a brake-fluid leak is then found at a disturbed connection. What remains?

- A. Increase booster output to compensate for leakage.
- B. Correct the separate containment fault and verify braking function.
- C. Lower reservoir level to reduce the leak.
- D. Release because assist is now acceptable.

118. An HVAC compressor is not requested. Independent measurements show ambient temperature differs substantially from the control input, and a prescribed input substitution permits the normal request. What should be assessed?

- A. Compressor replacement without a request-path check.
- B. Condenser replacement solely because request was inhibited.
- C. The ambient-input measurement path and control conditions.
- D. Refrigerant addition as sensor correction.

119. A steering-joint inspection requires measuring movement at a defined location. What should the technician do?

- A. Use that reference point and specified loading condition.
- B. Measure any nearby component with the same units.
- C. Estimate play solely from steering-wheel feel.
- D. Use wheel rim motion as every joint's clearance.

120. A diesel temperature sensor's prescribed check reads 2.6 V against a 2.1 V reference for the stated condition. What indicated difference results?

- A. 1.24 V.
- B. 0.5 V.
- C. 4.7 V.
- D. 0.05 V.

121. A clunk occurs when drive torque reverses. The prescribed inspection finds a loose differential mount, while gear backlash meets its supplied limit. What is supported?

- A. A charging-system update to secure the mount.
- B. A tire valve as the mechanical clunk source.
- C. Gear replacement despite acceptable measured backlash.
- D. Mount movement needs assessment as the observed load-change fault.

122. What does camber describe in conventional alignment terminology?

- A. The wheel-direction relationship viewed from above.
- B. The wheel's inclination viewed from the vehicle's front.
- C. The brake disc's circumferential thickness variation.
- D. Steering-axis inclination viewed only from the side.

123. A cylinder-head repair procedure specifies a surface-finish requirement for the selected gasket. What should preparation verify?

- A. Only that the surface appears reflective.
- B. More sealant as replacement for finish verification.
- C. Only that the gasket matches bolt holes.
- D. The actual mating surface meets that specified requirement.

124. What is the effect of an open in a simple series load circuit?

- A. It creates equal current in all unrelated branches.
- B. It permanently increases the source voltage.
- C. It interrupts the current path through that series load.
- D. It necessarily doubles the load's current.

125. What does a torque-converter lockup clutch do when applied as designed?

- A. Provide a mechanical coupling that reduces converter slip.
- B. Create all automatic-transmission reverse ratios alone.
- C. Set differential backlash through hydraulic pressure.
- D. Keep the engine turning when every rotating part is stopped.

Practice Exam 13: Answer Key and Explanations

1. C — The booster assists actuation according to its design, reducing required driver effort. It does not set sensor geometry or replace the integrity of the braking system's pressure boundaries. Different assist architectures have different tests, so a hard pedal still needs the applicable diagnosis rather than a universal replacement assumption.

2. D — The procedure controls both sealant suitability and placement. Apply it at the identified interfaces without introducing excess material into internal passages. A similar appearance does not establish compatibility, and extrusion into an oil path can create contamination or restriction rather than improve the intended external seal.

3. B — The complaint occurred under load, where ignition demand differs from idle. Verify that relevant operating condition using the approved safe method before claiming complete correction. An improved idle is useful but cannot prove the system now supplies adequate spark under the condition that originally produced the misfire.

4. A — The measured and inspected fit problem provides a local cause of increased load despite correct electrical command. Restore the specified glass movement and verify the function. Protection should not be bypassed to hide a bind, and fuse changes do not make an incorrectly assembled channel acceptable.

- 5. C** — Balancing and geometric roundness are different conditions. The measurements localize the excessive runout to the tire while the rim meets its check. More weight can correct imbalance but cannot be assumed to restore the tire's shape, so assess the component through its applicable inspection and disposition method.
- 6. A** — The real temperature changes while the original input remains fixed, and the receiving circuit responds to substitution. Focus on the sensor and local path before interpreting the faulty value as filter condition. A forced regeneration does not establish sensor accuracy and should not be used to bypass the measurement discrepancy.
- 7. C** — Add the four measurements for 26 mm and divide by four to obtain 6.5 mm average thickness. This numerical mean does not replace evaluating each pad against its required limit and wear pattern. One unacceptable pad cannot automatically be accepted because the set's average appears adequate.
- 8. D** — The shift reveals an uncertain load path during removal. Stop and safely restore verified support before releasing more fasteners. A nearly completed task does not reduce the supported weight, and hand restraint or an unreviewed load transfer to another mount cannot establish stability.
- 9. B** — The gauge must provide credible pressure evidence before its result drives a fuel-system decision. Verify it using the prescribed reference and setup. Engine operation or a suitable maximum scale does not establish measurement accuracy, and changing the acceptance value would hide uncertainty rather than resolve it.
- 10. B** — The repair must preserve both the sensing circuit and its physical installation condition. Restore the specified route and verify response. A conducting wire can still fail from heat or rubbing, so continuity and thread fit do not establish that the completed temperature measurement will remain reliable in service.
- 11. D** — The physical assembly fails its reference check, so restore that condition before using calibration to establish the control relationship. A sensor offset could have other causes, but this evidence identifies an actual installation discrepancy. Software adjustment should not be used to make an incorrect mechanical centre appear acceptable.
- 12. C** — Ready can permit commanded engine or propulsion operation even during a quiet interval. Establish the state required by the service procedure before continuing. Engine silence is an observation, not isolation, and partial component disconnection can create faults without demonstrating control of all energy relevant to the task.
- 13. A** — The unresolved linkage continues to impose abnormal demand on the new motor, as the current measurement confirms. Repair that load condition and retest. Replacing a motor can improve operation while leaving the cause of high demand present, so a changed symptom is not proof of a fully restored circuit and mechanism.
- 14. A** — Divide revolutions per minute by sixty seconds per minute: $1,800 \div 60 = 30$ revolutions per second, or 30 Hz for the stated one-event model. A different vibration order would require its corresponding multiplier; the calculation does not assume every vibration occurs once per revolution.

- 15. C** — Divide driven tooth count by driving count: $54 \div 18 = 3$. The result is the stated reduction for this pair. Adding or subtracting tooth counts does not describe the speed relationship, and reversing the division would give its reciprocal rather than the requested driven-to-driving ratio.
- 16. D** — The repaired circuit still needs its designed protection. Restore the specified type and rating after verifying the underlying fault is corrected. Normal function does not qualify an oversized fuse, and parallel protection or a permanent jumper can defeat the intended response to a future excessive-current condition.
- 17. B** — The command and localized open result point toward the cushion's heating path. Verify the element and connections under the procedure before choosing the repair. The fact that one seat fails does not establish a shared-control problem when the test identifies a physical electrical interruption in its local load.
- 18. C** — The hub's mechanical fit is only one interface when it also provides a speed target. Verify the complete application so the sensor receives the count and configuration expected by the control system. Appearance cannot establish that an integrated electronic or magnetic target matches the vehicle's required signal arrangement.
- 19. B** — Series resistances add, so $3 + 5 = 8$ ohms. The 1.875 value describes their parallel combination rather than the topology supplied. The calculation assumes those stated resistance values and a simple series model, not an unverified powered vehicle circuit with additional parallel paths.
- 20. D** — Multiply the millimetre value by one thousand: $0.075 \times 1,000 = 75 \mu\text{m}$. The unit change does not alter the physical dimension. Use the same quantity and measurement location when comparing it with a specification expressed in the converted unit.
- 21. A** — The independent temperature and substitution response connect the inhibition to an inaccurate input or its path. Diagnose that condition before replacing the charger. A protective stop can reflect incorrect information rather than hardware incapacity, and overriding or increasing current does not resolve the measurement that triggers the control decision.
- 22. C** — The chemical's hazards must be assessed in the actual hot-work environment, using its handling information and site controls. Fast drying does not establish compatibility with heat or fumes. Container capacity and welding-cable rating address different properties and cannot qualify the proposed spray exposure.
- 23. B** — Recovery must use the authorized procedure and compatible files for the actual module. Preserve the event information to support that process. Random attempts or repeated power removal can alter the failure state without resolving its cause and cannot establish a valid restored software configuration.
- 24. A** — The controlled routing change resolves the observed signal disturbance, linking the complaint to the added installation rather than proving module failure. Preserve and verify the approved separation and routing. A software change would not reproduce the demonstrated physical correction or qualify an interference-producing wiring path.

- 25. D** — The connected circuit can return contamination to a new compressor unless the prescribed process addresses it. Follow the applicable flushing and replacement instructions for components that can and cannot be cleaned. More lubricant or initial operation does not establish removal of debris from the system's internal passages.
- 26. C** — The hatch must move correctly and retain its protective responses after the mechanical fault is corrected. Complete the applicable tests across the required range. One favourable movement does not establish behaviour at the original binding point or verify the obstacle and reversal functions assigned to the installed system.
- 27. A** — The failed assist-supply check provides a relevant path to diagnose, while the free linkage reduces a mechanical binding alternative. Hard pedal feel alone does not identify the booster itself. Test the supply and associated controls under the applicable architecture before assigning a component repair.
- 28. D** — Divide the measured voltage loss by current: $0.15 \div 20 = 0.0075$ ohm. The result represents effective resistance under that load. Whether the cable is acceptable depends on the applicable drop limit and test conditions, not on the computed number without its circuit specification.
- 29. B** — Secure mounting addresses retention but does not establish clear motion through the operating envelope. Correct the interference using the approved arrangement. Contact can damage the shaft or shield, and unrelated balancing or fluid changes cannot qualify the mechanical clearance that still fails its specified check.
- 30. D** — The independent check identifies failure of a required valve function before installation. Obtain a suitable verified part or disposition under the process. Connector fit cannot qualify closed-state sealing, and changing duty or code memory does not remove the leakage demonstrated by the prescribed test.
- 31. B** — The motor receives the required voltage, while high current and physical binding identify abnormal loading to assess. Verify the mechanism and motor using the prescribed tests. A larger fuse does not remove friction, and supply-only diagnosis would ignore the acceptable voltage measured directly across the loaded component.
- 32. A** — A click establishes movement, not low-resistance current delivery. The loaded comparison localizes loss between contact input and output, so assess that path under the circuit procedure. A normal input and working command do not make the contact capable of supplying the connected load when its measured drop is excessive.
- 33. C** — The event includes a localized ground shift and node reset while the bus elsewhere remains intact. Test the shared return under the triggering load. Temporary communication loss can be secondary to a reset, so a network-wide diagnosis should not ignore the direct power-reference evidence at the affected node.

- 34. C** — Divide energy by distance and multiply by one hundred: $32 \div 200 \times 100 = 16$ kWh per 100 km. This reports the provided observation. It does not independently determine usable battery capacity or predict every route, because operating conditions and energy accounting can change between tests.
- 35. B** — Gateway access establishes communication at that point, not throughout every connected segment. The confirmed open provides a localized path failure explaining the missing downstream group. Restore and verify it before component replacement. Stable module supply reduces one alternative but does not compensate for the interrupted data connection.
- 36. D** — Convert 25 ms to 0.025 seconds, then calculate $1 \div 0.025 = 40$ Hz. The result is pulse frequency under the stated model, not necessarily engine speed. Translating pulses to crankshaft rotation requires additional information about the ignition arrangement and events per revolution.
- 37. A** — The original failure involved current delivery through contacts, so verify that output under the relevant load as well as command response. A click indicates movement but cannot establish low resistance. Correct size and cleared history do not demonstrate restoration of the function that failed during operation.
- 38. D** — Subtract actual from target: $250 - 225 = 25$ kPa increase. Both readings use the stated checking condition. This arithmetic does not assign the correct pressure to another tire, loading or temperature state; actual adjustment must use the applicable vehicle and tire instructions.
- 39. B** — The replacement must restore the complete air path under the specified operating conditions. Verify its fit and resistance to the loads that affected the original component. Appearance and partial fastening do not establish sealing or sustained airflow, and tape cannot qualify an unsuitable duct design.
- 40. C** — Multiply the four stated equal pieces by nine millimetres: $4 \times 9 = 36$ mm. The calculation follows the approved arrangement given in the scenario. It does not authorize arbitrary stacks or establish their strength for an accessory whose real mounting instructions call for another design.
- 41. A** — The controlled isolation restores the common reference and unrelated sensor readings, identifying a branch fault affecting the shared supply. Diagnose that branch before condemning each sensor. Multiple incorrect values can be secondary to one reference disturbance, so their number alone does not establish independent component failures.
- 42. A** — The engine test can introduce exhaust into the occupied workshop, so provide the approved extraction and exposure controls before running it. A door or unrelated fan position does not establish effective removal at the source or acceptable conditions where technicians breathe.
- 43. D** — The independent inlet measurement identifies a flow restriction that can limit air supply despite a suitable command and normal fuel pressure. Diagnose and correct that path before resizing or replacing components. A turbocharger cannot be assumed defective solely because pressure response is poor when its incoming airflow is demonstrably restricted.
- 44. C** — The controlled lead change isolates a measurement-chain difference outside the unchanged meter and reference. Inspect that lead set and its connections before relying on vehicle readings. More display digits do not resolve an error that appears specifically when one set of leads is used.

- 45. B** — The automatic-leveling capability means key-off is not sufficient evidence that the body will remain stationary. Follow the specified disabling, support and energy-control process before entering the gap. Present ride height describes an instant, not the condition throughout the planned work.
- 46. D** — Controlled disconnection can produce codes reflecting the test setup rather than an additional vehicle fault. Record and distinguish them from the original event. This prevents an expected test consequence from causing unnecessary replacement while preserving the evidence and checks needed to assess the actual complaint.
- 47. C** — Subtract recorded mass from the supplied requirement: $610 - 560 = 50$ g. The calculation applies to this stated recharge record and assumes both values use the same accounting basis. Follow the actual service process rather than using gauge appearance to estimate the missing quantity.
- 48. A** — The measured demand and design mismatch explain why the original protection is operating. Correct the installation under an approved circuit arrangement. A larger fuse changes protection without establishing wire and component suitability, while another parallel load would add demand rather than divide the existing accessory's current safely.
- 49. B** — The external checks reduce release and linkage alternatives, while the inspected tooth damage localizes an internal engagement condition. Assess that gear's components under the transmission procedure. Jumping out alone would not identify one part, but the physical finding supports a specific repair path beyond unrelated hydraulic or tire changes.
- 50. C** — Subtract the amount already added from the given total: $1.6 - 1.25 = 0.35$ L. The calculation assumes the stated additions refer to the same fill operation. Verify the applicable final fill method and level; the quantity does not supply a universal capacity for other driveline units.
- 51. A** — Multiply the given voltage and current: $13 \times 4 = 52$ W. The calculation uses their simultaneous stated operating condition. If voltage or current varies in a real controlled circuit, appropriate measurement and modelling are needed before this simple product can represent its actual power.
- 52. B** — Wake-up requirements define the operating conditions that activate the node under the vehicle's control design. A sleeping module may not respond as it does when active. These requirements are not mechanical fastening or fluid specifications, so confirm the applicable vehicle state before interpreting absence of a response.
- 53. D** — The inspection identifies a local sliding defect capable of affecting contact and wear despite an acceptable piston-return check. Assess the guide and pad-support arrangement under the procedure. Uneven wear alone has several possible causes, but the physical binding localizes a more specific condition than a system-wide hydraulic assumption.
- 54. B** — The procedure sets pre-operation conditions for the completed brake repair. Verify them before the road test rather than using traffic operation to discover an unresolved leak or inadequate pedal condition. Fluid level alone cannot demonstrate the integrity and functional reserve assigned by the required readiness checks.

55. A — The interlock monitors the specified connection or access conditions defined by the vehicle architecture. It is a protective input rather than direct analysis of battery-cell chemistry. Its exact path and response vary, so a fault requires tracing the applicable circuit and following the high-voltage service instructions.

56. D — The two checks assess different ways a brake can remain applied or bound. Either condition can contribute to drag, so use the prescribed method to distinguish them. One acceptable result does not automatically qualify the other path or justify a single-component conclusion from wheel temperature alone.

57. C — Balance and structural integrity are different requirements. The crack must be assessed and resolved through the approved disposition process, regardless of the satisfactory balance result. Weight or extra torque cannot restore verified material integrity and may conceal or worsen the damaged wheel mounting condition.

58. C — The changed component and measured circulation condition point toward the thermostat interface and its applicability. Verify the approved part and arrangement before changing unrelated controls. More fan airflow cannot automatically restore coolant flow through a location whose replacement geometry differs from the engine requirement.

59. B — Multiply the final volume by the stated concentration fraction: $10 \times 0.30 = 3$ L concentrate. Seven litres of water completes the simplified mixture. Follow the approved formulation for the actual system; the percentage calculation does not establish chemical or electrical compatibility of an unidentified coolant product.

60. D — The clearance must remain acceptable throughout movement, not merely at the centred position. Verify the range and restore the approved supports. A correct part number does not establish a safe harness route, and using a moving component as restraint introduces abrasion or entanglement rather than qualifying the installation.

61. A — Subtract initial torque from final torque: $90 - 40 = 50$ N·m increase. The stages are given for this scenario, not a universal fastener recommendation. Assembly still needs the applicable sequence, tool and component requirements rather than using the difference alone as a tightening instruction.

62. A — Unsupported access cannot provide the required diagnostic evidence. Obtain a compatible tool or the approved alternative for the actual vehicle. A blank or unsupported display is not a result, and changing vehicle software just to accommodate equipment may introduce an unrelated unapproved intervention.

63. D — The inspection demonstrates restricted movement rather than looseness. A joint needs suitable motion as well as acceptable play, so evaluate its condition under the driveline procedure. A free-play pass alone cannot qualify a bearing surface that binds through part of its required operating travel.

64. B — The joint must be retained correctly and move as specified after installation. Check the complete arrangement rather than just appearance. Excess assembly force can create binding or damage, and shaft dimensions do not demonstrate that the installed bearings and yokes allow the required travel.

- 65. C** — A total value can be acceptable while its distribution and steering reference are wrong. Verify and correct the complete specified geometry. The failed individual checks provide direct evidence beyond the off-centre symptom, and unrelated tire or bearing changes cannot substitute for the required alignment setup.
- 66. A** — The specified setup position provides the adjustment reference for the sensor. Follow it and verify the required range agreement afterward. One favourable display or a cleared code does not demonstrate that the input accurately follows the selector throughout the states needed for starting, shifting and vehicle control.
- 67. B** — The link must be assembled in its approved arrangement and function through the required suspension motion. Complete retention and movement checks. Appearance and partial attachment cannot establish those conditions, while arbitrary extra bushing compression can change the interface instead of producing the specified installed state.
- 68. D** — The controlled removal restores performance and directly addresses airflow across the condenser. That evidence supports the obstruction as a contribution rather than immediate compressor replacement. Normal command does not ensure heat rejection when air passage is blocked, and no measurement here establishes a separate refrigerant or blend-door fault.
- 69. C** — The target produces pulses, but the controller expects a particular relationship between pulse count and wheel rotation. A different tooth count can therefore give clean-looking waveforms while reporting an incorrect speed. Verify the hub's complete application and target specification before replacing the sensor or altering software. Signal quality and signal meaning are different checks. Correct electrical supply does not make an incompatible physical target provide the count expected by the vehicle's wheel-speed strategy.
- 70. C** — The pad support remains a separate mechanical condition affecting movement and retention. Restore the specified hardware and verify the complete assembly. Free caliper travel does not establish that pads are correctly supported, and arbitrary grinding or more pedal force cannot qualify an out-of-range retaining interface.
- 71. B** — The inlet must provide the mechanical and control conditions required by its charging strategy. Verify locking and associated response under the procedure. An illuminated indicator or exterior fit does not prove retention, while tape is not a qualified substitute for the specified connector-locking mechanism.
- 72. D** — The valve spring provides the return force assigned by the valve-train design, helping the valve follow its intended movement. Its condition and installed requirements must be inspected appropriately. Fuel pressure, electrical regulation and coolant storage are separate system functions that are not established by this spring.
- 73. A** — The element needs correct installation and controlled operating behaviour as well as a conducting path. Verify the prescribed temperature and electrical checks. Continuity alone cannot

establish safe control or correct assembly, and direct power bypasses the function intended to regulate the repaired heating circuit.

74. C — The same incorrect value is already present at the source, so receivers may be relaying it correctly. Diagnose the source measurement before condemning message routing. Agreement across recipients does not prove the physical input is accurate; it distinguishes a shared source-data problem from separate interpretation faults downstream.

75. D — The specified method controls assembly and loading of the wheel joint. It does not qualify damaged threads or guarantee the absence of every tire and chassis vibration. Follow the actual hardware and tightening instructions instead of treating maximum available tool output as the intended fastener condition.

76. A — The coil supports spark generation by transforming electrical energy within the ignition system's design. Its output must be assessed with the boot, plug and control conditions. It does not mechanically set compression ratio or directly meter fuel, even though those conditions can affect the spark demand or engine performance.

77. B — The mechanical lever reaches the selected position while the reported input does not follow it. Diagnose the range sensor, adjustment and related circuit under the procedure. This distinction separates position reporting from internal power flow, so the incorrect display is not direct proof that the reverse clutch has failed.

78. A — The actuator can report movement while a detached linkage prevents that motion reaching the air door. Verify and restore the mechanical connection under the procedure. Data alone cannot establish driven-component motion when inspection shows the relationship has been broken, and refrigerant changes do not reconnect the linkage.

79. C — The fault-state checks establish suitable external command and supply while indicating an internal open in the starter. Assess that component under the procedure. Intermittent failure requires testing during the event; measurements made only after cooling would not carry the same evidence about the path that becomes open.

80. B — Multiply distance per revolution by revolution count: $2.1 \times 100 = 210$ m. This uses the supplied circumference and no-slip assumption. Real odometry and tire behaviour require their applicable calibration and operating conditions, so the example is a geometric relationship rather than proof of vehicle distance accuracy.

81. D — The installed build determines which nodes should be present and active under the procedure. An optional module absent from the vehicle is not automatically a communication fault. Verify the expected inventory before testing or replacing a component that the actual equipment configuration does not require.

82. D — The initialization establishes the control's intended travel relationship after the mechanical repair. Complete it and verify the required movement and protective functions. One manual closure

demonstrates a limited state, not the full operating range or the learned endpoint information specified for that window system.

83. C — Compare the measurement with the lower limit: $0.20 - 0.16 = 0.04$ mm below minimum. The upper-limit difference is a different quantity. Adjustment must follow the actual valve-train method and specified temperature or position rather than using this numerical difference without the procedure.

84. B — The failed closed-valve sealing test identifies an unintended vapour path that can affect mixture, particularly in the refuelling context. Assess and repair through the evaporative-system procedure. Negative correction alone would not localize the cause, but the independent valve result provides more specific evidence than replacing injectors immediately.

85. A — The boot is part of a connected spark path, so check its mating interfaces and conditions that contributed to tracking. A new boot alone may not resolve a damaged plug or contaminated well. Counter clearing and external dimensions do not demonstrate restored ignition performance under the original complaint condition.

86. B — Air transfer between adjacent cylinders during controlled leak-down supports a fault in the boundary separating them. Inspect according to the engine procedure before assigning a specific repair. The result identifies a sealing path more directly than ignition or external airflow components, which do not create that inter-cylinder connection.

87. D — The blocked vent is a related condition that can contribute to leakage and must be resolved alongside any defective seal. Replacing the seal alone may leave the initiating pressure condition present. Follow the specified vent and sealing checks rather than closing ventilation or increasing fill beyond the required amount.

88. A — Subtract the upper limit from the observation: $0.22 - 0.16 = 0.06$ mm excess. The difference from the lower limit is not the requested exceedance. Corrective work must follow the assembly's specified bearing, spacer and measurement procedure rather than adjusting solely from the arithmetic.

89. C — The controlled separation and defined tests identify the component's contribution to isolation loss. Follow the high-voltage procedure for its disposition before reconnection. A passing remainder does not qualify the faulty section, but it provides evidence against replacing every high-voltage assembly solely from the system-level warning.

90. A — The condenser transfers heat from the refrigerant to the air passing across it during the cooling cycle. Adequate airflow therefore matters to performance. It is distinct from the evaporator, which absorbs cabin-air heat, and should not be treated as an engine-oil or internal motor-cooling device in this stated cycle.

91. B — The relocation must preserve the specified condenser airflow and restore operation in the conditions that exposed the complaint. Attachment alone does not demonstrate clearance. Comparable performance checks verify the intended outcome, while changing compressor command without authorization does not establish correction of the original physical obstruction.

92. C — The straightedge provides a dimensional reference for checking surface deviation along the specified paths. The result depends on correct tool condition and technique. It does not directly determine fluid concentration or electrical signals, which require different instruments and procedures during an engine inspection.

93. D — The boot tracking and excessive gap provide physical evidence within the ignition path, which operates as a connected high-voltage system. Inspect all relevant parts rather than treating the coil alone as the diagnosis. A valid command does not prove the delivered spark remains adequate under cylinder load.

94. B — Subtract the lowest contribution from the highest: $92 - 74 = 18$ units of spread. The arbitrary units are defined by the given test result, not compression pressure. Apply the relevant balance-test criterion before judging acceptability or identifying why the contribution differs.

95. A — Feedback reports a designed position quantity, which may come from the actuator or a related component. Its meaning must be identified in the service information. A changing value does not automatically prove an intact linkage or describe every door, so actual motion can still require independent verification.

96. C — Free rotation does not demonstrate the required clearance at this measured interface. Correct and verify the valve condition using the engine procedure. Engine speed and lubricant choice cannot substitute for the specified mechanical relationship established by the applicable adjustment and checking method.

97. D — The repair must restore the full designed connection, including electrical and mechanical features as well as environmental sealing. A cover alone does not establish those conditions. Sealing does not qualify incorrect terminal mapping or remove the need to verify the circuit after its physical connection is restored.

98. B — The position-specific current rise and physical bind support an abnormal mechanical load that can trigger reversal. Correct it through the approved process. Disabling protection or increasing fuse rating does not remove the obstruction and would change safeguards rather than restore the required hatch motion.

99. D — Correct configuration does not compensate for inadequate power at the module. The loaded feed measurement identifies an outstanding circuit condition that can cause resets. Repair and verify that path before judging the replacement unit's operation, rather than repeating software work under the same unsuitable supply condition.

100. A — The probe measures electrical current in the selected conductor, which can support assessment of injector actuation when interpreted with the correct reference. It does not directly image spray or measure nozzle geometry. A current trace alone is therefore not complete proof of hydraulic delivery quality.

101. C — The management system needs the correct installed information where the procedure requires registration. Complete it and verify the relevant charging response. Physical dimensions and unrelated

resets do not provide the data needed for that control strategy, while another battery's entry can make the recorded configuration inaccurate.

102. B — The replacement must restore the required electrical and mechanical condition and pass the applicable tests before normal operation. A cleared warning or similar connector appearance cannot establish isolation integrity. Follow the vehicle's complete reassembly and verification sequence rather than using energization as the initial connection check.

103. C — The check establishes an incorrect fill condition under the specified state, with aeration and unstable pressure accompanying it. Correct the fill and verify the relevant performance before assigning internal parts. Further overfilling or ignoring the measurement state would retain or worsen the demonstrated service discrepancy.

104. A — Divide the millisecond duration by one thousand: $80 \div 1,000 = 0.08$ seconds. Correct time units are important when comparing capture events. The duration itself does not identify a network fault cause without information about the signal, operating state and applicable timing requirement.

105. D — The high-pressure system's replacement instructions govern components, safety and assembly conditions. Use the specified new parts rather than attempting to restore single-use items through tightening or sealant. Matching bore does not establish the alternative's pressure, connection and material suitability for this installation.

106. B — The recent work and verified open connection provide a local fault candidate, while substitution shows the receiving input can respond. Repair and verify the disturbed path before condemning the module. A warning without context is not a component diagnosis, but these controlled observations narrow the relevant circuit.

107. D — Multiply by the supplied conversion factor: $1.8 \times 1,000 = 1,800$ kPa. This converts the reading without diagnosing its cause. System interpretation still requires identified refrigerant, correct operating conditions and the applicable pressure-performance information for the vehicle being assessed.

108. C — The failed measurement-chain check prevents relying on the indicated work-point value. Establish a valid instrument and perform the required verification under the HV procedure. Selecting or averaging uncertain readings cannot prove absence of hazardous voltage, and opening the component would expose workers before that condition is demonstrated.

109. A — The replacement must restore the actual circuit mapping and suitable physical condition. Shape alone does not establish compatibility, and continuity between the wrong terminals is not an accepted network repair. Follow the specified connector views and complete connection and communication verification before release.

110. C — The independently observed shaft rotation contradicts the zero output-speed input during the connector dropout. Because the ratio calculation divides or compares speed inputs, that invalid reading can create an apparent mechanical ratio fault even when the gear behaviour has not been established. Repair and verify the measurement path, then repeat the transmission test under valid conditions. Data

calculations are useful only when their underlying signals represent the actual rotating components during the same event.

111. A — Diameter is only one part of clutch-disc suitability. Hub position and orientation must allow the intended assembly and movement without interference. Verify the correct component rather than modifying it or relying on actuation adjustment to qualify an unapproved geometry in the torque-transfer path.

112. B — An image demonstrates some camera operation but not the required geometry or calibrated relationship to vehicle functions. Verify the actual hardware and setup instructions. Similar screens or an apparently straight mount cannot establish applicability of another vehicle's calibration method or qualify an unapproved bracket arrangement.

113. D — The repair must reconnect actuator movement to the actual air door and restore the associated feedback and temperature response. Unloaded actuator travel was possible during the fault, so it cannot alone verify this correction. Follow the prescribed range and function checks rather than forcing the mechanism beyond its limits.

114. A — Limited-slip designs and approved lubricants differ, so service needs the actual unit's instructions. A generic additive can change friction characteristics without authorization. Colour and a broad design name cannot establish which fluid, modifiers or functional tests apply to this axle's diagnosed condition.

115. C — The diagram and inspection identify an actual physical mismatch in the repaired branch. Restore the specified assignments and verify communication before replacing modules. Software and battery changes cannot reconnect a conductor to its intended terminal or establish the correct physical bus path.

116. D — The controlled restraint changes the symptom at the identified loose link, providing localized evidence. Inspect and disposition that link and its attachments through the procedure. Other acceptable checks reduce unrelated candidates but do not excuse the loose connection that demonstrably affects the knock during the test.

117. B — Assist and hydraulic containment are separate acceptance requirements. Resolve the identified leak under the repair procedure and complete the specified functional checks. A satisfactory assist reading does not make a leaking pressure connection acceptable, and changing effort or reservoir level does not restore that joint's integrity.

118. C — The substitution restores the control request, connecting the inhibition to the incorrect input or its path. Diagnose that measurement before condemning the compressor. An absent request can be a deliberate control response to faulty information, and adding refrigerant does not repair the sensor discrepancy demonstrated independently.

119. A — Movement at different points can include different leverage and adjacent component effects. Follow the defined reference and load so the result matches the applicable limit. A similar unit or

general steering feel does not make an arbitrary observation equivalent to the specified joint measurement.

120. B — Subtract the stated reference from the observation: $2.6 - 2.1 = 0.5$ V. This establishes a numerical discrepancy, not its cause. Sensor, wiring and measurement conditions still require the applicable tests before the difference can justify a repair decision.

121. D — The loose mount provides a physical path for movement when torque direction changes. Correct and verify it under the procedure before assigning internal gear repair. A clunk alone has several possible causes, but acceptable backlash and observed mounting looseness help distinguish support movement from the gear-clearance alternative.

122. B — Camber is the wheel's front-view inclination under the stated alignment convention. Caster and toe describe different geometric relationships, while disc-thickness variation belongs to brake inspection. Keeping those quantities separate helps interpret the supplied alignment measurements rather than treating any wheel-related number as interchangeable.

123. D — The gasket interface needs the specified surface condition, not merely a visually smooth appearance. Verify the preparation using the applicable method. Matching holes establishes fit, while extra sealant cannot qualify a finish outside the gasket and engine requirements or replace the required inspection evidence.

124. C — A simple series path needs continuity through all its elements for current to flow. An open interrupts that path rather than automatically increasing voltage or current. Real monitored circuits can display additional indications, but those do not change the basic series relationship stated in this question.

125. A — The lockup clutch establishes a mechanical coupling under the permitted operating strategy, reducing the hydraulic converter's slip. It is distinct from the gearset elements selecting ratios. It does not set axle backlash or define every operating state of the engine and transmission.