

PRACTICE EXAM 12: 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. An inspection measures a 0.036 mm shaft variation. The report field requires micrometres, with 1 mm = 1,000 μm . What value should be entered?

- A. 3.6 μm .
- B. 36 μm .
- C. 0.000036 μm .
- D. 360 μm .

2. After a module replacement, its identifier differs from the required configuration and the vehicle reports incompatible function data. Power, ground and wiring pass. What is the supported repair focus?

- A. Correct part applicability and approved configuration before further replacement.
- B. Replace unrelated sensors to avoid configuring the new unit.
- C. Replace the passed harness solely from the message.
- D. Increase battery voltage to change the module variant.

3. A shock absorber is replaced after verified leakage and poor function. What should installation check?

- A. Removal of a travel stop to avoid checking clearance.
- B. Only whether the new unit fits between bolts.
- C. Specified mounting, travel clearance and related component condition.
- D. Only the old unit's external dimensions.

4. An intermittent sensor fault disappears when its damaged ground splice is temporarily restored using the prescribed test connection. Reference and signal wiring otherwise pass. What is supported?

- A. The engine controller is proved faulty by restored ground.
- B. The local sensor-ground path contributes to the fault.
- C. Immediate sensor replacement regardless of the ground result.
- D. Every shared-reference sensor is independently defective.

5. A suspension ride-height check requires specified tire pressures and vehicle loading. What should preparation do?

- A. Use the tallest corner as a universal reference.
- B. Adjust alignment before checking the required loading.
- C. Measure with any cargo present.
- D. Establish those conditions before comparing measured heights.

6. A crank journal measures 49.95 mm and the assembled bearing bore is 50.00 mm. What diameter-based clearance is calculated?

- A. 0.05 mm.
- B. 0.5 mm.
- C. 0.025 mm.
- D. 99.95 mm.

7. A vehicle repeatedly discharges its battery overnight. The prescribed sleep-state draw is excessive, and removing one branch fuse lowers it to the supplied acceptable range. What should be localized?

- A. The alternator as the only cause without branch testing.
- B. The battery capacity as proof of the branch draw source.
- C. Loads and wiring on the identified fused branch.
- D. Every module as simultaneously defective.

8. A diesel loses boost after hose work. Turbo command is present, but a pressure test reveals leakage at a newly disturbed charge-air joint. What should be addressed first?

- A. A new particulate filter without restriction evidence.
- B. Injector coding as direct repair of the leaking hose joint.
- C. Turbocharger replacement solely because boost is low.
- D. The identified charge-air leak and repaired joint condition.

9. A lubricant fill calls for 2.2 L, and 1.85 L has been added. What additional quantity reaches the stated total?

- A. 0.5 L.
- B. 0.35 L.
- C. 4.05 L.
- D. 0.035 L.

10. A replacement starter fits, but its rotation direction differs from the supplied application requirement. What should selection do?

- A. Use a verified starter matching the complete vehicle application.
- B. Accept it because mounting holes align.
- C. Alter the ring gear without an approved procedure.
- D. Reverse battery polarity to match its rotation.

11. An EV records 24 kWh over 160 km. What consumption per 100 km follows from those values?

- A. 150 kWh/100 km.
- B. 38.4 kWh/100 km.
- C. 15 kWh/100 km.
- D. 6.67 kWh/100 km.

12. A cabin filter is replaced after a confirmed restriction. What should installation verify?

- A. Only that the lid closes with added force.
- B. Correct element, orientation, seating and restored airflow.
- C. Removal of all sealing edges to reduce restriction.
- D. Only matching the element's outer dimensions.

13. A cylinder has swept volume 450 cm³ and clearance volume 50 cm³. Using compression ratio = (swept + clearance)/clearance, what ratio results?

- A. 9:1.
- B. 11:1.
- C. 8:1.
- D. 10:1.

14. A deformed power-seat track is replaced. What should completion verify?

- A. Only unloaded motor operation.
- B. Specified fastening, full loaded travel and related restraint connections.
- C. Only matching upholstery appearance.
- D. Disabling travel stops as clearance correction.

15. Why must brake friction surfaces remain free of incompatible lubricant during assembly?

- A. Oil on the disc directly calibrates the ABS sensor.
- B. Lubricant always increases stopping friction.
- C. Contamination can change the required friction behaviour.
- D. Lubricant replaces all pad-retaining clips.

16. An alternator charge-warning fault is present, but output voltage and current satisfy the supplied test. The warning-control wire is open at an inspected connector. What needs diagnosis?

- A. The warning-control circuit and verified connector condition.
- B. Increasing engine speed to close the open wire.
- C. Battery replacement despite satisfactory loaded charging results.
- D. Alternator replacement solely from the warning lamp.

17. A tire loses pressure slowly. A prescribed leak test reveals bubbles at its valve stem, while bead and tread checks are negative. What is the best supported repair target?

- A. Immediate wheel replacement without evaluating the valve.
- B. The pressure sensor's software as the bubble source.
- C. A tread puncture despite its negative check.
- D. The identified valve assembly and its sealing condition.

18. An intermittent communication fault coincides with water inside a connector. Drying and a controlled connection repair restore the signal, but the water-entry source remains open. What should the diagnosis recognize?

- A. The connection condition and recurring water-entry cause both need resolution.
- B. Permanent release because one dry test passed.
- C. Replacement of all bus modules as prevention.
- D. A higher supply voltage as water protection.

19. A repaired connector passes a stationary check but its terminal withdraws when the harness is lightly moved under the prescribed inspection. What should be corrected?

- A. Using an extra software update to lock the terminal.
- B. Acceptance from the initial stationary result.
- C. Increasing fuse rating as retention repair.
- D. Terminal locking and strain control before final circuit verification.

20. A washer pump runs and discharge reaches the hose upstream of a nozzle, but the nozzle produces no spray. Disconnecting it restores flow from the hose. What is supported?

- A. An empty reservoir despite measured flow.
- B. The wiper motor as the nozzle's fluid blockage.
- C. Restriction at the nozzle or its immediate connection.
- D. A failed pump despite confirmed upstream delivery.

21. A brake service instruction specifies a bedding procedure for the installed friction parts. What should handover include?

- A. An arbitrary driving distance without the stated conditions.
- B. The applicable controlled bedding and operating verification requirements.
- C. Only advising that new pads will correct every noise.
- D. Immediate maximum braking on public traffic as a universal method.

22. A seized ball joint is replaced. What should repair completion include?

- A. Increasing assist output to compensate for installation binding.
- B. Specified assembly, alignment-related checks and free steering or suspension movement.
- C. Only confirming the joint fits its mounting holes.
- D. Only a stationary warning-lamp check.

23. Brake vibration appears after a wheel is installed. Supplied inspection finds unevenly tightened fasteners and excessive mounted disc runout that resolves after the approved assembly correction. What is supported?

- A. The steering rack is the demonstrated runout source.
- B. The disc must always be permanently defective.
- C. The wheel-mounting condition affected the measured brake assembly.
- D. Higher torque than specified is the necessary remedy.

24. What does a gasoline fuel-pressure regulator principally control in its specified system?

- A. Fuel filtration through a replaceable element.
- B. Fuel-vapour storage in the evaporative canister.
- C. Injector electrical pulse duration directly.
- D. The required fuel-pressure relationship for operating conditions.

25. A gasoline pressure regulator is replaced after a verified fault. What should repair verify?

- A. Specified pressure behaviour and leak integrity through the operating checks.
- B. Only that the rich code has been erased.
- C. Only that the connector or hose fits.
- D. An unmeasured reduction in pump voltage as acceptance.

26. A gasoline smoke-test procedure limits the pressure applied to the evaporative system. What should the technician do?

- A. Use tank size as permission to increase pressure.
- B. Apply full shop-air pressure to shorten the test.
- C. Use the specified equipment and pressure conditions.
- D. Assume every vapour system tolerates fuel-rail test pressure.

27. A 24 W lamp operates at a stated 12 V. Using $I = P/V$, what current results?

- A. 2 A.
- B. 288 A.
- C. 12 A.
- D. 0.5 A.

28. A supplied brake-bleeding process removes 180 mL at each of four circuits. What total quantity is collected?

- A. 184 mL.
- B. 45 mL.
- C. 360 mL.
- D. 720 mL.

29. A diesel starts poorly when cold. Rail pressure reaches the supplied cranking requirement, compression passes, but two commanded glow-plug circuits draw no current. What is the next supported focus?

- A. A particulate-filter restriction as the missing preheat current.
- B. Those preheating circuits and their verified electrical paths.
- C. Immediate engine overhaul despite acceptable compression.
- D. A weak high-pressure pump despite its passed requirement.

30. Two service documents list different tightening sequences. One applies to an earlier engine revision; the other matches the verified installed engine code and production range. Which should govern?

- A. The verified applicable revision-specific procedure.
- B. An alternating mixture of both sequences.
- C. The sequence requiring the fewest torque stages.
- D. The earlier sequence because it has been used longer.

31. A diagnostic capture contains 2,400 frames in 12 seconds under the stated count method. What average frame rate results?

- A. 2,388 frames/s.
- B. 200 frames/s.
- C. 28,800 frames/s.
- D. 0.005 frames/s.

32. An EV repair requires high-voltage disablement and absence-of-voltage verification at defined points. What should preparation follow?

- A. Only switching the dashboard off.
- B. Only removing a low-voltage fuse.
- C. The assumption that zero motor speed proves zero electrical energy.
- D. The model-specific sequence, specified instruments and qualified work controls.

33. Airflow is weak in all selected outlets. Blower voltage and current satisfy the supplied test, and removing an obstructed cabin filter restores flow. What is supported?

- A. The compressor is the sole cause of weak ventilation.
- B. The blower motor is proved faulty despite restored flow.
- C. Filter restriction contributed to the airflow complaint.
- D. The refrigerant sensor directly restricted the removed filter.

34. A transmission diagnostic procedure requires checking fluid level at a specified temperature and selector state. What should the technician do?

- A. Measure immediately after any unrelated road test.
- B. Establish both conditions before interpreting the level.
- C. Judge the level from the drained quantity alone.
- D. Use the cold reading as universal acceptance.

35. Oil pressure is low only when the engine is hot. An independent mechanical gauge confirms the reading, and pressure improves substantially with increased speed. What should be investigated?

- A. Battery capacity as the measured hot-pressure cause.
- B. A blocked air filter as direct oil-pressure proof.
- C. Actual lubrication-system condition under the specified hot test.
- D. Replacement of the indicator alone despite confirmation.

36. A module remains offline after its supply is restored. Loaded power and ground meet the supplied limits, and a verified compatible diagnostic connection communicates with other nodes on the same branch. What should be tested next?

- A. Assuming branch communication proves the missing node is functional.
- B. Battery replacement despite passed loaded supply.
- C. Replacement of every branch node.
- D. The offline node's local communication connection and specified response.

37. After a wheel-bearing replacement, play meets specification but the required retaining lock is not engaged. What must be addressed?

- A. Restore the specified retention and verify the complete assembly.
- B. Acceptance because measured play is satisfactory.
- C. An unapproved stake in a different component.
- D. More lubricant as locking-device replacement.

38. A new engine bearing fits physically, but its identification indicates a different clearance class from the measured assembly requirement. What should be done?

- A. Accept it because the shell seats in the housing.
- B. Use thicker oil as dimensional qualification.
- C. Select verified correct bearings and confirm assembled clearance.
- D. Increase cap torque to reduce the mismatch.

39. A fuel-line repair instruction prohibits reuse of a damaged quick connector. What should installation use?

- A. The old connector after squeezing its retaining tabs.
- B. The specified suitable replacement and complete engagement checks.
- C. The damaged connector with extra external sealant.
- D. A longer hose to compensate for missing retention.

40. A wheel-bearing diagnosis specifies rotating and loading the assembly in a defined way. What should testing follow?

- A. Any convenient unloaded spin as full acceptance.
- B. Only the driver's estimate of remaining bearing life.
- C. Only the wheel's appearance.
- D. That specified method before interpreting noise or movement.

41. An ABS activates near walking speed with no skid. One sensor waveform loses pulses at a damaged tone-ring section, while other wheels remain stable. What should be localized?

- A. The damaged target and associated wheel-speed signal.
- B. The common brake booster as the missing-pulse cause.
- C. All tires as necessarily unmatched.
- D. The controller as defective despite a localized waveform defect.

42. An alignment adjustment changes total toe from 4 mm inward to a specified 1 mm inward. What reduction in inward toe is required?

- A. 3 mm.
- B. 4 mm.
- C. 0.25 mm.
- D. 5 mm.

43. A heating complaint persists despite hot coolant entering and leaving the heater core. The air door is mechanically jammed away from the heating path, while its actuator receives command. What should be localized?

- A. A thermostat replacement solely from cold cabin air.
- B. The air-door mechanism and required motion.
- C. A radiator replacement before inspecting the jam.
- D. Coolant addition despite the verified hot core flow.

44. A network harness repair is complete but lies against an exhaust heat shield outside its approved route. What should be done?

- A. Increase conductor size as thermal-route qualification.
- B. Accept it because continuity is presently correct.
- C. Use more splice sealant instead of correcting contact.
- D. Restore specified routing and protection, then verify the repaired circuit.

45. An HVAC oil-accounting instruction specifies 120 mL total after the stated component work. Verified retained oil is 85 mL. What additional volume reaches that stated total?

- A. 205 mL.
- B. 120 mL.
- C. 35 mL.
- D. 3.5 mL.

46. A refrigerant connection's sealing ring is damaged during assembly. What should be used?

- A. Unverified liquid sealant inside the refrigerant passage.
- B. Extra tightening as seal replacement.
- C. A specified new compatible seal and approved reassembly method.
- D. The damaged ring turned to expose another side.

47. Steering is heavy in one direction. The supplied electrical checks pass, but a controlled mechanical separation localizes binding to a ball joint. What is supported?

- A. The power-assist module must be defective despite passed checks.
- B. The identified mechanical joint needs assessment before electrical replacement.
- C. The battery requires replacement from steering effort alone.
- D. A software update is proved necessary by mechanical binding.

48. A shaft runout is 0.18 mm against a supplied maximum of 0.10 mm. What amount exceeds the limit?

- A. 0.08 mm.
- B. 0.28 mm.
- C. 0.018 mm.
- D. 0.05 mm.

49. A diesel preheating repair replaces one verified failed element. What should completion include?

- A. Only measuring the new part's package dimensions.
- B. Only clearing the stored starting complaint.
- C. Replacing fuel additives as verification of electrical operation.
- D. Electrical and operating checks required for the repaired preheating system.

50. A tire valve replacement requires an assembly suited to the installed wheel and sensor. What should be used?

- A. Extra sealant as sensor compatibility proof.
- B. The previous tightening value from an unrelated wheel.
- C. Any valve fitting the visible hole.
- D. Verified compatible parts and the specified installation method.

51. A transmission loses drive after warming. Input and output readings show slip, and the prescribed hot pressure test falls below specification while the cold test passes. What should diagnosis reproduce?

- A. Only the favourable cold result.
- B. Only a stationary engine-off selection check.
- C. The temperature-dependent hydraulic condition under the required hot tests.
- D. A tire rotation as the hot-pressure correction.

52. What does a universal joint allow within its permitted operating geometry?

- A. A fixed zero angle regardless of suspension movement.
- B. Torque transmission between shafts whose axes have an angular relationship.
- C. Automatic correction of every shaft imbalance.
- D. Permanent conversion of forward drive into reverse.

53. A power seat moves normally without load but stalls with a seated occupant. Loaded supply is satisfactory, and the track binds at an inspected deformed section. What should be assessed?

- A. The track's mechanical condition and required movement under load.
- B. The supply fuse solely because a stall occurs.
- C. Increasing fuse rating to overcome the deformed track.
- D. The switch as proved open despite successful unloaded command.

54. What is a bore gauge principally used to assess in an engine inspection?

- A. Exhaust oxygen concentration at the sensor.
- B. Fuel-vapour pressure in the canister.
- C. Internal diameter and variation at the specified measurement locations.
- D. Electrical current through the starter cable.

55. A supplied tire check compares diameters of 642 mm and 650 mm. What measured diameter difference results?

- A. 0.8 mm.
- B. 1,292 mm.
- C. 4 mm.
- D. 8 mm.

56. During a cooling-system repair, pressure remains indicated after the engine cools and a prescribed inspection finds a blocked pressure-release path. What is required before opening the system?

- A. Remove the nearest hose clamp to verify pressure.
- B. Release retained pressure using the approved safe-release procedure.
- C. Open the cap rapidly because temperature is lower.
- D. Treat cooling as proof that all pressure vanished.

57. A vibration occurs at one road-speed band and persists in different engine gears. Measured shaft runout exceeds the supplied limit, while tires meet their checks. What should be assessed?

- A. The shaft's runout and related driveline installation.
- B. Replacement of tires despite acceptable results.
- C. Engine firing order as the measured shaft defect.
- D. Transmission software alone as proof of a bent shaft.

58. A vehicle's lift-point reinforcement is visibly damaged at the location normally specified for support. What should preparation establish?

- A. Raise the vehicle only halfway to qualify the damage.
- B. An approved support method suitable for the vehicle's actual condition.
- C. Move the pad slightly without assessing structure.
- D. Use the damaged location because the manual names it.

59. A differential rebuild achieves acceptable backlash, but the gear-contact pattern fails its supplied criterion. What remains?

- A. Increase lubricant fill above the specified level.
- B. Apply more axle-nut torque as gear-contact adjustment.
- C. Release it because backlash alone is within range.
- D. Resolve contact pattern and related setup before acceptance.

60. A camshaft repair requires keeping identified bearing caps in their specified locations and orientations. What should assembly do?

- A. Reverse every cap to expose a fresh surface.
- B. Choose orientation by the easiest bolt access.
- C. Preserve the verified identification and install as the procedure requires.
- D. Mix caps to distribute visible wear.

61. A gasoline injector test uses a supplied 5 ms on-time in a 20 ms cycle. What duty percentage results?

- A. 25%.
- B. 400%.
- C. 15%.
- D. 0.25%.

62. What does a door-ajar input generally report to its associated control system?

- A. The door-lock motor's operating current.
- B. The sensed open-or-closed condition specified for that door.
- C. The requested position of every door lock.
- D. The sensed window up-or-down position.

63. Two redundant position signals disagree. Independent motion checks show one signal tracks correctly while the other remains fixed at its local sensor output. What should be investigated?

- A. Both channels as equally faulty despite independent evidence.
- B. Erasing the discrepancy without testing the fixed channel.
- C. The fixed-output channel and its sensor or local circuit.
- D. A network gateway as the proven mechanical-position cause.

64. A cooling fan starts when commanded through the approved test but not when expected during the complaint. Temperature input disagrees with an independent measurement. What should be assessed first?

- A. The inaccurate temperature input and the normal control conditions.
- B. The fan fuse despite successful commanded operation.
- C. The fan motor solely because automatic operation is absent.
- D. A larger fan as correction for the measurement discrepancy.

65. A brake disc varies from 25.00 to 25.04 mm in the prescribed circumferential measurements. What thickness variation is calculated?

- A. 0.4 mm.
- B. 50.04 mm.
- C. 0.02 mm.
- D. 0.04 mm.

66. A diesel charge-air hose is replaced. What should installation check?

- A. Specified hose position, retention and leak performance.
- B. A tighter clamp beyond instructions as universal sealing.
- C. Only the clamp screw's convenient orientation.
- D. Only matching nominal hose diameter.

67. A propeller shaft is removed for repair. What should reinstallation preserve?

- A. Only its approximate total length.
- B. An arbitrary flange position chosen for easiest bolt access.
- C. Only the previous coating pattern.
- D. Specified orientation, phasing, hardware and operating clearances.

68. An interior lamp remains on. The module sees one door open although it is latched, and a prescribed switch substitution changes the input correctly. What is the supported focus?

- A. The remote transmitter as the latched-door measurement.
- B. That door's sensing component and local connection.
- C. All interior lamp bulbs as the false-input source.
- D. The module as proved defective despite substitution response.

69. An HVAC performance procedure specifies ambient conditions, blower setting and engine operating state. What should testing establish?

- A. Only the customer's remembered vent temperature.
- B. Any convenient setting with the same gauge set.
- C. Those stated conditions before comparing performance readings.
- D. Only static pressure before starting.

70. An electrical specification allows 0.30 V maximum drop in a tested path. Measurement is 0.48 V. What amount exceeds the limit?

- A. 0.78 V.
- B. 0.30 V.
- C. 0.18 V.
- D. 0.048 V.

71. A solvent container lists incompatible handling requirements with the gloves currently selected for cleaning. The replacement task involves prolonged contact. What should be changed?

- A. Select protection and handling controls verified for that chemical exposure.
- B. Shorten each cleaning stroke while keeping the gloves.
- C. Assume glove thickness alone establishes chemical resistance.
- D. Use two layers of the same unverified gloves.

72. An HVAC blower works only at its highest setting. The supplied diagram shows lower settings use a separate resistor path, and that path measures open under the prescribed isolated test. What should be assessed?

- A. The refrigerant charge as the electrical open-circuit cause.
- B. The blower motor as necessarily open despite high-speed operation.
- C. The cabin temperature sensor as direct proof of resistor continuity.
- D. The lower-speed resistor path and associated connections.

73. What does an oscilloscope add when examining an intermittent sensor signal?

- A. Automatic proof that every connected component is good.
- B. A time-based view of signal behaviour and transitions.
- C. Guaranteed identification of every fault without reference data.
- D. A direct measurement of mechanical bearing clearance.

74. A network fault appears only when a trailer accessory is connected. Inspection finds its interface tied into a data conductor contrary to the supplied diagram. What should be corrected first?

- A. A larger accessory fuse to improve communication.
- B. Every trailer lamp as the data-wire repair.
- C. The vehicle gateway solely because a trailer is present.
- D. The unauthorized interface connection and affected wiring condition.

75. A water-entry investigation finds a clogged body drain. What should diagnosis verify before assigning a seal replacement?

- A. The assumption that all cabin water comes through the nearest seal.
- B. Drain path condition and the relationship to the observed entry.
- C. Only the exterior seal's visible surface condition.
- D. Only the windshield's glass thickness.

76. A network connector inspection specifies terminal-drag testing with approved tooling. What should be used?

- A. The specified terminal-test method without damaging contact geometry.
- B. Visual cleanliness as replacement for every retention check.
- C. Direct force on the terminal with an unrelated screwdriver.
- D. A larger drill bit as a tighter-fit probe.

77. An SRS occupant input is incorrect only after a seat cushion replacement. The installed cushion differs from the supplied part applicability, while harness checks pass. What should be investigated?

- A. A battery change as mechanical cushion qualification.
- B. A fixed substitute input to avoid correcting the seat.
- C. Correct seat-component applicability and required system calibration.
- D. Module replacement solely from the displayed occupant state.

78. A harness repair requires sealed splices, but the completed joint is exposed at a water-entry location. What should be done?

- A. Accept it because resistance is presently low.
- B. Move the water drain to discharge over another connector.
- C. Apply ordinary paper tape as permanent sealing.
- D. Restore the specified sealing and route protection, then verify the circuit.

79. A gearbox ratio is 2.5:1 and final-drive ratio is 4:1. What combined reduction results under the stated arrangement?

- A. 0.625:1.
- B. 10:1.
- C. 6.5:1.
- D. 1.6:1.

80. An electronic parking brake applies one side only. The nonmoving side has correct command and loaded supply, but the disconnected caliper mechanism is seized. What should diagnosis recognize?

- A. Both actuator supplies must be absent.
- B. The shared switch is necessarily faulty despite one-sided operation.
- C. A local mechanical obstruction prevents the commanded movement.
- D. The controller must be replaced to free the seized mechanism.

81. A vehicle wanders despite acceptable static alignment. During the prescribed loaded inspection, a control-arm bushing allows movement beyond its supplied limit. What needs assessment?

- A. The unstable suspension support and its effect on operating geometry.
- B. Tire-pressure monitoring software as bushing support.
- C. The air-conditioning compressor as the measured movement source.
- D. Only another static toe adjustment.

82. What is the function of a cabin air filter in its intended HVAC path?

- A. Regulating refrigerant mass at the service port.
- B. Changing compressor lubrication electrically.
- C. Removing specified airborne material from air passing through that path.
- D. Setting coolant pressure at the expansion reservoir.

83. What does toe describe in conventional wheel-alignment measurements?

- A. Steering-axis tilt seen only from the side.
- B. The relationship of wheel direction to the vehicle reference in plan view.
- C. The wheel-bearing's axial clamping force.
- D. Wheel tilt seen directly from the front.

84. A thickness gauge blade is bent and no longer seats flat at the specified valve-clearance location. What should be used?

- A. The bent blade with extra insertion force.
- B. The blade's printed thickness as proof of measurement validity.
- C. Two damaged blades stacked to improve stiffness.
- D. An undamaged suitable gauge and the specified measurement method.

85. An HVAC control module replacement requires a specified actuator calibration. What should completion include?

- A. The applicable calibration and full mode or temperature travel checks.
- B. Manually forcing every door to one end without instructions.
- C. Only resetting the clock.
- D. Only confirming the blower turns.

86. A replacement HV cable fits its connectors but lacks verified shielding and routing applicability for the vehicle. What is required?

- A. Additional ordinary tape as shielding qualification.
- B. An arbitrary longer route to avoid checking applicability.
- C. A compatible approved assembly and installation verification.
- D. Acceptance from connector fit alone.

87. A brake drags at one wheel. Opening the bleeder does not release it, and the prescribed inspection finds the caliper slide seized. What is best supported?

- A. The master cylinder must be replaced solely from one dragging wheel.
- B. A mechanical sliding fault contributes to the drag.
- C. Upstream retained pressure is proved by the unchanged drag.
- D. The wheel-speed sensor causes the seized slide.

88. A warm gasoline engine restarts poorly after a short stop. Fuel pressure decays rapidly, and the prescribed isolation test localizes leakage to one injector. What should be assessed?

- A. That injector's leakage and resulting cylinder fuel condition.
- B. The starter motor as the demonstrated fuel-pressure leak.
- C. The intake air filter as the isolated leak path.
- D. All oxygen sensors from pressure decay alone.

89. What does regenerative braking generally do when the vehicle permits it?

- A. Guarantees friction brakes are never needed.
- B. Creates energy without reducing vehicle motion.
- C. Maintains one fixed battery voltage at every operating state.
- D. Converts part of vehicle motion energy into electrical energy.

90. What does a communication trouble code chiefly establish before supporting tests are performed?

- A. Proof that every power and ground path is satisfactory.
- B. Definite failure of the module named in its description.
- C. A detected communication condition within the code's defined context.
- D. Automatic confirmation that the network wiring is undamaged.

91. A damaged ground terminal is replaced. What should the completed repair verify?

- A. Only an unloaded continuity tone.
- B. A second terminal stacked without instructions.
- C. Only that the terminal fits over the stud.
- D. Specified retention, surface contact and loaded circuit performance.

92. What does a loaded voltage-drop test principally reveal about a conductor path?

- A. Voltage lost while current flows through that path.
- B. The coolant's thermal expansion coefficient.
- C. Total stored chemical energy in the battery.
- D. Mechanical clutch release travel.

93. A clutch hydraulic repair requires a specified bleed sequence. What should be verified afterward?

- A. Only clearing the engine's stored history.
- B. The required actuation travel, leak integrity and release function.
- C. Only the reservoir level.
- D. Only that the pedal can be pressed.

94. A supplied EV cooling instruction calls for 8 L of 40% concentrate mixture, neglecting contraction. What concentrate quantity is required?

- A. 0.32 L.
- B. 4.8 L.
- C. 3.2 L.
- D. 20 L.

95. What does a shock absorber or damper principally control?

- A. The rate of suspension motion through its damping action.
- B. The suspension spring's static support height directly.
- C. The axle's toe setting through its lateral links.
- D. The steering's caster angle through alignment adjustment.

96. Why is conductor size important when repairing a vehicle power circuit?

- A. Any conductor is equivalent if continuity is present.
- B. It must meet the circuit's current, voltage-loss and installation requirements.
- C. Larger diameter changes the fuse's specified opening logic automatically.
- D. Wire size alone identifies the correct sensor software.

97. A humming differential shows contaminated lubricant and pitted gear-contact surfaces. Noise changes with drive-to-coast load. Wheel bearings meet their checks. What warrants further diagnosis?

- A. The engine air intake as the gear-surface cause.
- B. The wheel bearings solely because humming is heard.
- C. The brake switch as the lubricant contamination source.
- D. The differential's gear and support condition.

98. A no-crank fault occurs with a correct start request. The relay output is present unloaded but collapses when the solenoid is connected, and relay supply remains stable. What should be tested next?

- A. The battery solely from the word no-crank.
- B. The starter gear teeth as proof of electrical output collapse.
- C. The start-request input as the only cause.
- D. The relay contact and loaded output path.

99. An EV cooling circuit is repaired after a confirmed leak. What should completion include?

- A. Only a stationary voltage measurement.
- B. Operating at maximum charge before verifying circulation.
- C. The specified containment, filling, bleeding and thermal-operation checks.
- D. Only topping the reservoir and clearing history.

100. A bus short is suspected. With the system in its specified isolated test state, separating one harness segment removes the measured short while its disconnected module is not attached. What is supported?

- A. The isolated wiring segment needs short-location testing.
- B. The gateway software caused the passive wiring short.
- C. The disconnected module alone is proved faulty.
- D. Every termination resistor must be replaced.

101. A repaired automatic transmission operates normally, but its cooler contains debris from the original internal failure. What should completion address?

- A. Install a larger cooler hose without cleaning the circuit.
- B. The prescribed contamination removal or component replacement for the cooler circuit.
- C. Add more fresh fluid to dilute all retained debris.
- D. Release based only on restored shifting.

102. A transmission has normal pressure in forward selections but no required reverse pressure at the specified test point. Selector input is verified correct. What should be localized?

- A. The reverse-specific hydraulic engagement path.
- B. The tire pressures as the direct reverse-pressure cause.
- C. Every forward clutch because they engage normally.
- D. The shift input sensor despite its verified reverse state.

103. A high-voltage isolation fault appears after moisture enters an accessible service connector. The prescribed isolated checks localize the condition to that connection. What should diagnosis focus on?

- A. Replacement of every HV component without localization.
- B. Bypassing the isolation monitor for continued operation.
- C. A software reset as removal of moisture.
- D. The localized contamination, damage and approved connection restoration.

104. An accessory installation uses three specified 12 mm spacing pieces in the stated stack. What total spacing results?

- A. 15 mm.
- B. 144 mm.
- C. 36 mm.
- D. 4 mm.

105. A cooling-passage repair leaves abrasive debris visible at a prepared gasket face. What should completion include?

- A. Install the gasket so it traps the loose debris.
- B. Remove contamination and verify the required surface and passage condition.
- C. Apply more sealant over the contamination.
- D. Use coolant circulation as the initial cleaning step.

106. After injector replacement, one connector seal is trapped outside its intended seat and the latch does not engage fully. What should be done?

- A. Accept it because the engine initially runs.
- B. Correct the connector assembly and verify retention before operation.
- C. Increase terminal pressure by bending pins without instructions.
- D. Tape it in place as the permanent repair.

107. A gasoline engine runs rich, and measured pressure exceeds the supplied specification. Its return path is restricted during the prescribed isolation test. What is best supported?

- A. The pressure-regulation or return arrangement needs localized diagnosis.
- B. A weak pump is confirmed by excessive pressure.
- C. The oxygen sensor must be replaced solely from rich operation.
- D. A lean intake leak is the proven reason for high measured pressure.

108. A hybrid's low-voltage bus falls below its supplied operating minimum while ready. Traction energy is available, and the specified DC-to-DC output test also fails. What should diagnosis assess?

- A. Immediate traction-battery replacement from bus voltage alone.
- B. The starter pinion as the converter output fault.
- C. The converter's commanded operation, supply and output paths.
- D. A larger low-voltage fuse as voltage regulation.

109. A vehicle's transfer case binds after two tires are replaced. Actual rolling circumferences differ beyond the supplied tolerance, and the complaint disappears with a verified matched set. What is supported?

- A. The engine mount necessarily changes with tire matching.
- B. A steering-angle calibration alone corrects physical circumference mismatch.
- C. Immediate transfer-case replacement is proved despite recovery.
- D. The mismatched rolling condition contributes to the binding.

110. A door-ajar switch is replaced after a verified fault. What should repair checks include?

- A. Only a cleared body code.
- B. Only the switch's physical fit.
- C. A fixed closed input regardless of actual door state.
- D. Accurate latched and unlatched inputs and associated functions.

111. A communication connector's damaged retaining lock is identified as nonrepairable in the supplied instructions. What should assembly use?

- A. Tape over the damaged lock as permanent retention.
- B. A larger screw through the housing.
- C. The specified replacement housing or assembly and engagement verification.
- D. Extra terminal grease as mechanical locking material.

112. Why is correct module variant configuration important after replacement?

- A. It repairs every damaged network terminal automatically.
- B. It matches the unit to the vehicle's equipment and network role.
- C. It guarantees all sensor readings are accurate.
- D. It replaces the need for circuit verification.

113. A repaired intake joint passes a smoke check, but fuel corrections remain abnormal only during the original cold-start condition. What should verification do?

- A. Reproduce the relevant cold condition and continue targeted diagnosis.
- B. Replace every injector from one warm reading.
- C. Force adaptation values to zero as the completed repair.
- D. Release it from the warm smoke test alone.

114. A diesel return-flow test collects 90 mL in 45 seconds. What rate is calculated?

- A. 120 mL/min.
- B. 4,050 mL/min.
- C. 67.5 mL/min.
- D. 2 mL/min.

115. A clutch slips under acceleration. Pedal free movement meets the supplied specification, but oil is found on the friction surfaces during the authorized inspection. What should diagnosis include?

- A. A differential ratio change as the contamination repair.
- B. The contamination source and friction-component condition.
- C. A larger release bearing to restore contaminated friction.
- D. Only shortening the pedal linkage regardless of its measurement.

116. In a four-stroke engine, what does the camshaft's timing relationship primarily control?

- A. Fuel quantity delivered by each injector.
- B. Valve clearance at each cam follower.
- C. Ignition energy supplied by the coil.
- D. Valve events relative to piston and crankshaft position.

117. An EV thermal fault follows coolant-pump service. Pump command is present, but the prescribed flow check fails and air remains at the specified high point. What should be addressed first?

- A. Ignoring flow because a command signal exists.
- B. Increasing charge current to clear air.
- C. Complete the approved filling and air-removal process, then verify circulation.
- D. Battery replacement solely from a thermal warning.

118. An SRS repair requires replacing a specified damaged wiring assembly rather than splicing it. What should be used?

- A. The approved assembly and complete restraint-system procedure.
- B. A generic splice based only on conductor colour.
- C. Extra tape to qualify the damaged circuit.
- D. A permanent simulator instead of the harness.

119. A repaired path loses 0.20 V while carrying 15 A. Using $P = V \times I$, what power is dissipated there?

- A. 0.0133 W.
- B. 75 W.
- C. 3 W.
- D. 15.2 W.

120. A coolant-temperature display remains cold, but an independent specified measurement shows normal operating temperature. The module reads correctly during the approved sensor-circuit substitution. What is best supported?

- A. The radiator must be too large.
- B. The module must be replaced despite correct substitution response.
- C. The thermostat is necessarily stuck open.
- D. The sensor or its local measurement connection needs assessment.

121. A steering repair restores free movement, but the rack's specified mounting torque has not been verified. What should completion require?

- A. Release from the free-motion observation alone.
- B. Complete the mounting acceptance and functional checks.
- C. A longer road test as fastener verification.
- D. Extra tightening without following the sequence.

122. A removed traction battery is awaiting authorized handling. What should its storage follow?

- A. A metal cover placed across exposed terminals.
- B. The applicable damaged-or-serviceable battery condition and manufacturer's handling requirements.
- C. Charging with a generic shop charger to preserve capacity.
- D. Ordinary parts storage based only on available floor space.

123. A brake hose is replaced for a confirmed internal restriction. Afterward, the wheel still drags and the slide remains seized during inspection. What remains?

- A. Acceptance because the original hose was replaced.
- B. Increasing brake-fluid level as the seizure correction.
- C. Another hose replacement without checking the slide.
- D. Correct the separate mechanical binding and verify complete release.

124. A driveline delivers stated input torque 160 N·m through a 3:1 reduction with assumed 90% efficiency. What output torque results?

- A. 432 N·m.
- B. 144 N·m.
- C. 48 N·m.
- D. 480 N·m.

125. An axle repair uses a replacement retaining device with unverified engagement geometry. It appears installed but does not meet the supplied retention check. What is required?

- A. Increase oil viscosity as retention compensation.
- B. Accept it from external appearance.
- C. Use the approved retaining arrangement and verify engagement.
- D. Drive until the component seats itself.

Practice Exam 12: Answer Key and Explanations

1. **B** — Multiply the millimetre reading by the supplied conversion factor: $0.036 \times 1,000 = 36 \mu\text{m}$. The conversion changes reporting units without changing the physical measurement. The final dimensional assessment still depends on the component's specified measurement method and allowable variation.
2. **A** — The verified wiring and identified configuration discrepancy point toward applicability or programming of the replacement unit. Resolve those conditions with the approved procedure. Passing electrical paths does not make the wrong variant suitable, and unrelated sensor replacement cannot supply the required module identity and function configuration.
3. **C** — The damper must fit and operate through its required travel without interference, using the specified mount arrangement. Bolt fit alone does not establish that its motion and attachment conditions are acceptable. Inspect related parts and follow the applicable checks rather than deleting a stop or using appearance as qualification.
4. **B** — The controlled restoration resolves the symptom and localizes a fault contribution to the ground path. Repair and verify that connection through the procedure. The test does not prove every other component perfect, but it provides a specific reason to address the damaged splice before replacing the sensor or controller.
5. **D** — Ride height depends on tire and load conditions as well as suspension support. Set the specified state before interpreting differences. Comparing arbitrary loaded measurements with a standard intended for another condition can create a false fault diagnosis or conceal a genuine spring or mounting problem.
6. **A** — Subtract the journal diameter from the assembled bore: $50.00 - 49.95 = 0.05$ mm diameter-based clearance. Dividing by two would express a radial difference instead. Compare the requested quantity with the engine's applicable specification using its prescribed bearing and measurement conditions.
7. **C** — The controlled fuse isolation identifies a branch responsible for the excess draw under the specified sleep condition. Diagnose its loads and paths before assigning parts. A depleted battery may be a consequence, while the test provides direct evidence of consumption through a particular circuit branch.
8. **D** — The test localizes an actual leak at the recently disturbed joint, providing a clear first repair target. Restore it and repeat the relevant boost verification. A normal turbo command does not guarantee manifold pressure when the air path leaks, so low boost alone cannot justify replacing the turbocharger.
9. **B** — Subtract the recorded addition from the supplied total: $2.2 - 1.85 = 0.35$ L. This is a quantity calculation for the scenario, not a universal axle capacity. Verify the specified lubricant and applicable final level or fill method for the repaired assembly.
10. **A** — Mounting fit does not establish the starter's operating compatibility. The specified direction must match the vehicle application. Reversing battery connections can damage electrical systems and is

not a qualification method, while ring-gear modification would introduce an unapproved mechanical change rather than supply the correct starter.

11. C — Normalize consumption by dividing 24 kWh by 160 km and multiplying by 100. The result is 15 kWh per 100 km for the stated observation. This distance-based measure does not directly establish battery capacity, degradation or the consumption expected under every other road and weather condition.

12. B — The element must fit its intended housing and airflow arrangement without bypass or improper restriction. Verify the correct replacement and restored performance. Appearance or forcing the lid does not demonstrate proper seating, and removing seals changes the filtration path rather than completing the specified repair.

13. D — The total volume at the stated lower position is $450 + 50 = 500 \text{ cm}^3$. Divide by the 50 cm^3 clearance volume for a 10:1 ratio. Using swept volume alone gives 9:1 and omits the clearance volume required by the supplied formula.

14. B — The track affects mechanical movement and may interface with seat restraint or sensing components. Follow the complete installation and verification process. Unloaded operation does not establish the loaded travel that exposed the original fault, and deleting stops alters the approved movement envelope rather than verifies it.

15. C — The friction surfaces need the condition specified for braking performance, distinct from designated lubricated sliding interfaces. Incompatible material can alter that behaviour. It does not substitute for hardware or sensor calibration, so use the approved cleaning and assembly process if contamination occurs.

16. A — The charging function passes its defined tests while a separate warning path has a demonstrated open connection. Repair and verify that circuit under the diagram. A warning indicator alone does not establish failed output, and higher engine speed cannot correct a conductor that is physically disconnected.

17. D — The bubbles localize an actual air-leak path at the valve. Inspect and repair the specified valve assembly, then verify pressure retention. Negative bead and tread checks reduce those candidates, while software does not seal the physical opening through which the test shows air escaping.

18. A — The restored signal links the immediate fault to the wet connection, but an unresolved entry source can recreate it. Identify and correct both conditions under the repair process. A dry test verifies one state and cannot establish durability if the same environmental exposure can reach the connection again.

19. D — The movement check demonstrates insecure mechanical retention at the repaired connection. Restore the locking arrangement and strain relief, then repeat electrical and movement checks. A stationary pass does not qualify durability, and fuse or software changes cannot secure a terminal that withdraws from its intended position.

- 20. C** — The flow is available to the nozzle and returns when that final restriction is removed. Inspect the nozzle and its immediate connection under the service method. Pump sound alone would be weak evidence, but confirmed delivery and controlled separation localize the blockage beyond the verified hose path.
- 21. B** — The selected friction system's instructions define the required bedding and checks. Follow the approved controlled process and relevant operating precautions. An arbitrary distance or aggressive unspecific road use does not demonstrate that the intended surface and thermal conditions have been achieved for those parts.
- 22. B** — The replacement must be installed correctly and move within its required mechanical range. Complete related geometry and function checks as specified. Appearance and a warning-lamp check do not demonstrate free mechanical motion, while additional assist would conceal a binding installation rather than qualify it.
- 23. C** — The controlled assembly correction restores the runout measurement, tying the condition to mounting rather than proving a permanently damaged disc. Preserve the specified preparation and tightening method. Excess torque is not the demonstrated remedy; the evidence supports the approved consistent assembly condition that corrected the measurement.
- 24. D** — The regulator controls fuel pressure according to the architecture and references used by the particular system. Its exact operating relationship must be verified in service information. It does not mechanically set valve timing, alter coil windings or change catalyst volume despite those components affecting overall engine operation.
- 25. A** — The replacement must restore the pressure function and containment for which it was installed. Repeat the relevant operating and leakage checks. Fit and code clearing do not demonstrate actual regulation, while altering pump voltage without authorization introduces another condition rather than verifying the repaired system.
- 26. C** — The vapour system has testing requirements distinct from a liquid fuel rail. Follow its approved pressure and equipment conditions to avoid damage and invalid results. Tank volume does not establish permissible pressure, and shop-air supply capability is not the service limit for the connected evaporative components.
- 27. A** — Divide the specified power by voltage: $24 \div 12 = 2$ A. The problem assumes operation at the stated voltage and rating. This calculation does not replace a loaded current measurement when diagnosing an actual lamp whose operating conditions or internal state may differ.
- 28. D** — Multiply four equal collected volumes by 180 mL: $4 \times 180 = 720$ mL. This describes the collection stated by the scenario, not the amount every vehicle needs for bleeding. Actual completion depends on the system's specified sequence, fluid condition and functional acceptance checks.
- 29. B** — The tests establish acceptable pressure and compression while identifying absent current in commanded preheating circuits. Diagnose those electrical paths before assigning pump or mechanical

repair. The no-current observation provides a specific fault condition consistent with the cold-start complaint, rather than merely a general difficulty starting the diesel.

30. A — Applicability is determined by the actual installed configuration, not age or convenience of the document. Use the matching revision-specific procedure. Mixing sequences creates an unverified method, while fewer stages do not establish the clamp-loading requirements intended for this engine and its specified hardware.

31. B — Average rate is total counted frames divided by recording time: $2,400 \div 12 = 200$ frames per second. This is an aggregate count under the stated method, not a network bandwidth or arbitration-speed specification. Those quantities require additional information about bit rate and frame structure.

32. D — The repair needs the complete defined isolation and verification sequence. Stopped motion and a dark display describe operating state, not the energy condition at the work points. Follow the actual vehicle instructions and suitable equipment rather than inferring high-voltage safety from a single low-voltage action.

33. C — The controlled filter removal restores airflow while electrical blower checks remain satisfactory. That identifies the restriction as a contribution to the complaint. Verify the proper replacement and fit afterward; the result does not justify compressor replacement because ventilation airflow is distinct from refrigerant heat-transfer operation.

34. B — Level interpretation depends on the procedure's thermal and operating state. Set those conditions before comparing the result with the requirement. Drained quantity can vary with retained fluid and does not directly establish the final level at the state intended for this particular transmission check.

35. C — The independent gauge verifies a real pressure condition rather than merely an indicator fault. Evaluate the lubrication system under the engine's required temperature and speed conditions. Improved pressure with speed is useful evidence but does not by itself isolate one pump, clearance or regulation component without the prescribed tests.

36. D — The shared branch operates and the node's supplies pass, narrowing further diagnosis to its local connection and response. Verify those conditions using the network procedure. Other nodes communicating does not prove that the particular offline node is connected or functioning, but it weakens an immediate whole-branch replacement decision.

37. A — Bearing adjustment and mechanical retention are separate assembly requirements. A satisfactory play measurement does not qualify an unsecured retaining arrangement. Restore the specified locking method and verify the completed assembly rather than substituting an unapproved modification or relying on the present adjustment alone.

38. C — Physical seating does not establish the required running clearance. Match the bearing selection to verified measurements and confirm the assembly under the procedure. Extra torque or altered lubricant viscosity cannot make an incorrect clearance class equivalent to the specified dimensional condition.

- 39. B** — The connector's damaged retention or seal arrangement requires the specified replacement, not an improvised restoration. Verify engagement and integrity under the repair instructions. Sealant and hose length do not supply the mechanical and sealing functions that the approved quick connection must provide.
- 40. D** — The test arrangement determines what the observation represents. Follow the prescribed loading and rotation conditions before comparing results with the requirement. A convenient unloaded spin may not reproduce the relevant fault, and visual condition alone cannot establish every internal bearing performance characteristic.
- 41. A** — The missing pulses correspond to physical target damage at one wheel and can create an inaccurate low-speed input. Assess that assembly using the prescribed checks. The evidence localizes a signal-generation problem rather than proving a common booster or controller fault from the activation symptom alone.
- 42. A** — Both measurements use the same inward reference, so subtract the target from the initial value: $4 - 1 = 3$ mm reduction. The calculation does not assign equal adjustment to each side; final procedure also governs steering centring and the individual values needed for the vehicle.
- 43. B** — Heat is available at the core, but the jammed door prevents the intended air path from using it. Assess the mechanism and linkage before altering coolant components. An actuator command proves a request, not successful door movement, which is the observed missing function in this case.
- 44. D** — The repaired circuit must meet physical installation requirements as well as electrical continuity. Resolve the heat and contact exposure before release. Larger wire or additional sealant does not establish that an unapproved route near the exhaust maintains acceptable insulation and mechanical condition throughout vehicle operation.
- 45. C** — Subtract retained oil from the supplied final requirement: $120 - 85 = 35$ mL additional. The calculation uses the problem's stated accounting conditions. Actual service must follow the vehicle's oil type and quantity procedure; this example is not a universal addition after replacing any HVAC component.
- 46. C** — The sealing ring needs replacement with the correct component before the joint is accepted. Turning a damaged ring or tightening more does not restore its verified condition. Follow the specified preparation, assembly and leak verification rather than adding an unapproved material to the refrigerant circuit.
- 47. B** — The separation test localizes a physical source of resistance at the ball joint. Assess that condition under the suspension and steering procedure. Heavy steering by itself could involve assist or mechanical causes, but the controlled isolation provides evidence that should be resolved before replacing verified electrical components.
- 48. A** — Subtract the stated maximum from the measured runout: $0.18 - 0.10 = 0.08$ mm above limit. This numerical result indicates a nonconforming measurement under the supplied criterion. The actual corrective method requires the shaft's applicable inspection and repair instructions.

- 49. D** — The repaired preheating path needs confirmation that command, current and required operation are restored under the applicable procedure. Clearing a complaint or examining packaging does not establish installed function. Fuel additives cannot demonstrate that the replaced electrical element now receives and responds to its intended control.
- 50. D** — The replacement must suit the complete wheel and sensor arrangement, not merely pass through the opening. Use the specified parts and assembly conditions. Sealant or an unrelated tightening value cannot establish mechanical compatibility, sealing or protection of the pressure-sensor assembly attached to that valve.
- 51. C** — The fault is temperature-dependent, and the hot pressure measurement confirms a condition absent during the cold test. Reproduce and localize it using the specified diagnostic method. Cold acceptance cannot establish satisfactory hot operation, and engine-off selection does not load the hydraulic circuit that loses pressure after warming.
- 52. B** — The universal joint transmits torque while accommodating the angular relationship allowed by its design and installation. Its operating limits and arrangement still matter. It does not inherently balance every shaft or reverse drive direction, and a functioning joint need not hold all connected axes at zero angle.
- 53. A** — The satisfactory loaded supply and localized deformation support mechanical binding that worsens under occupant load. Inspect the track and related mechanism before changing electrical protection. Unloaded movement alone cannot establish acceptable loaded operation, and a larger fuse does not repair the obstruction or qualify the motor's increased demand.
- 54. C** — The bore gauge measures internal dimensions using its prescribed reference and setup. Multiple locations can reveal taper or out-of-round when the procedure calls for those checks. Electrical current, vapour pressure and oxygen concentration require instruments designed for different quantities rather than a dimensional bore inspection tool.
- 55. D** — Subtract the smaller diameter from the larger: $650 - 642 = 8$ mm. The result describes the specified dimension, not rolling circumference. Acceptance requires the applicable matching criterion and measurement method; a diameter difference cannot automatically be treated as every driveline's permissible tire mismatch.
- 56. B** — The indicated pressure and blocked release path provide direct evidence that the cooled system has not reached an established depressurized state. Cooling addresses temperature but is not a substitute for controlling retained pressure. Use the approved safe-release method and verify the work-point condition before separating a cap or hose. Loosening components to discover whether pressure remains can turn uncertainty into an uncontrolled release. The repair needs both thermal and pressure hazards addressed before opening.
- 57. A** — Road-speed persistence across gear choices and excessive shaft runout point toward the rotating driveline. Assess the measured geometry and supports through the procedure. The evidence is

more specific than the speed-band symptom alone and does not justify replacing acceptable tires or treating software as a physical runout repair.

58. B — The usual support instruction assumes an acceptable vehicle structure. Damage requires assessment and an approved alternative or disposition before lifting. Reduced height does not establish load capacity, and a small unverified pad relocation may place the load on another unsuitable area.

59. D — Backlash and tooth-contact pattern are separate setup requirements. A satisfactory backlash reading does not establish correct loading across the gear teeth. Adjust and verify through the applicable procedure. Lubricant overfill or an unrelated axle-fastener change cannot qualify an unacceptable contact pattern.

60. C — The identified caps belong to the specified assembly arrangement and must remain correctly located and oriented. Mixing or reversing them is not an approved wear correction. Use the applicable dimensional and fastening checks rather than selecting installation positions for convenience or appearance.

61. A — Duty percentage is on-time divided by total cycle time multiplied by 100: $5 \div 20 \times 100 = 25\%$. The problem states both intervals in milliseconds, so no additional time conversion is needed. Dividing in reverse produces a ratio unrelated to this pulse's active fraction.

62. B — The input provides information about the door condition used by the vehicle's body-control functions. Its exact switch and interpretation depend on the design. It does not directly measure window tint or chassis geometry, so diagnosis should follow the actual latch or switch circuit assigned to that door.

63. C — The independent movement check distinguishes the channels: one tracks the actual position, while the other does not at its measured local output. Diagnose the fixed channel using the applicable sensor procedure. Redundancy disagreement alone would not identify which input is wrong, but this evidence provides that distinction.

64. A — The controlled command demonstrates the fan can operate, while the inaccurate input can prevent the normal strategy from requesting it appropriately. Diagnose that measurement and applicable control conditions. Successful commanded movement does not prove every aspect of the circuit, but it weakens immediate replacement of the motor or its fuse.

65. D — Subtract minimum thickness from maximum: $25.04 - 25.00 = 0.04$ mm variation. Compare that quantity with the supplied disc-specific criterion under the same measurement method. Average thickness and discard margin are separate quantities and do not replace this circumferential variation result.

66. A — The hose must fit its intended route and sealing interfaces and be retained as specified. Verify the completed joint's integrity rather than relying on appearance or excess tightening. An overtightened clamp can damage parts and does not automatically restore a displaced hose or unsuitable sealing condition.

- 67. D** — The installation must restore the relationships and fastening conditions assigned by the driveline procedure. Overall length alone does not demonstrate phasing or orientation. Use verified marks and specifications where applicable, then complete the required checks rather than selecting assembly position solely for convenience.
- 68. B** — The receiving input responds to substitution, while the original sensing path reports an incorrect state. Investigate that component and its local connection. Replacing lamp bulbs would not correct the false command information, and the response test weakens an immediate conclusion that the receiving module is defective.
- 69. C** — Performance depends on the conditions under which the system is operated and measured. Follow the supplied setup before interpreting readings. Gauge equipment alone does not make different operating conditions equivalent, and a remembered temperature cannot replace a controlled measurement for the specified comparison.
- 70. C** — Subtract the supplied limit from the observed value: $0.48 - 0.30 = 0.18$ V above acceptance. The interpretation assumes the test used the specified points and load. Correcting the fault requires localized circuit checks rather than merely adjusting the displayed reading.
- 71. A** — The documented incompatibility and prolonged contact require a protection choice suited to the actual chemical and duration. Doubling an unsuitable material does not establish compatibility. Review the relevant handling information and approved controls rather than relying on visible thickness as evidence of resistance.
- 72. D** — The high-speed operation confirms the blower can run through its bypass path, while the isolated test identifies an open in the lower-speed circuit. Diagnose the resistor and related connections under the diagram. Refrigerant quantity does not repair the electrical path responsible for the missing speed selections.
- 73. B** — The oscilloscope displays how the signal changes over time, helping reveal dropouts or abnormal transitions that an averaged reading may miss. Interpretation still requires a suitable setup and applicable reference. The display alone does not prove all components good or automatically identify every possible cause.
- 74. D** — The interface differs from the approved circuit arrangement and loads or connects to a data path not assigned to it. Resolve that wiring before condemning the gateway. A fuse change does not correct topology, and replacing lamps would not restore the vehicle's intended communication connection.
- 75. B** — The drain obstruction can redirect or retain water, so verify its function and relation to the complaint before replacing seals. Local visible water does not necessarily identify where entry begins. Controlled testing and drain inspection distinguish a drainage fault from leakage through a different body interface.
- 76. A** — Terminal condition includes contact and retention features that can be damaged by unsuitable probing. Use the approved method and tool for the connector. A clean-looking cavity does not establish

contact force, while oversized improvised probes can create the very defect the inspection is meant to detect.

77. C — The changed seat component and applicability mismatch provide a direct candidate affecting the classification system. Verify the correct assembly and calibration under the SRS procedure. Passed harness tests do not make an unsuitable cushion acceptable, and substituting a fixed signal would hide the system's required occupant-dependent function.

78. D — The installation requires environmental protection as well as a conducting joint. Complete the specified sealed assembly and routing so the repair withstands its actual exposure. A low present resistance does not prove the unprotected splice will remain suitable after water reaches the repaired conductors.

79. B — Multiply the sequential reductions: $2.5 \times 4 = 10$. The combined ratio relates input and final output under the specified arrangement. Adding the ratios does not represent the cumulative speed reduction produced by two stages connected in series.

80. C — The verified command and supply establish required electrical conditions at the affected side, while inspection identifies a seized mechanical load. Resolve that obstruction through the prescribed tests. Operation on the other side does not qualify this assembly, but it weakens an immediate assumption that the common switch causes the local seizure.

81. A — Excess movement can change geometry under operating load even when a stationary alignment reading is acceptable. Inspect and disposition the bushing and related support under the procedure. Repeated static adjustment does not restore a component that fails to maintain the intended suspension relationship while loaded.

82. C — The cabin filter acts on ventilation air through the path defined by the vehicle's HVAC arrangement. It does not meter refrigerant or control coolant pressure. Inspection needs the specified filter type and condition because restriction or incorrect fit can affect the airflow available to the cabin system.

83. B — Toe concerns wheel direction viewed from above relative to the specified vehicle or axle reference. Caster and camber describe other geometric relationships. Bearing clamping force is a separate assembly condition, so its value cannot be substituted for an alignment measurement of wheel direction.

84. D — The gauge must fit the specified measurement interface without distortion affecting its use. Select an undamaged suitable blade and follow the procedure. Printed nominal thickness does not establish a valid clearance reading when a bent blade cannot seat correctly between the measured surfaces.

85. A — The control replacement must establish the required actuator relationships before normal function is accepted. Complete calibration and verify the affected air-door travel. A blower check addresses only another subsystem, while manual force does not provide the approved endpoint or position information required by the replaced controller.

- 86. C** — The high-voltage assembly must meet the vehicle's complete electrical and mechanical requirements. Connector fit establishes only one interface feature. Verify the approved cable, shielding and route rather than improvising material or geometry, then complete the required isolation and functional checks for the installed circuit.
- 87. B** — The unchanged condition after pressure release and direct seized-slide finding support mechanical binding at that caliper. Inspect the component and related pad movement under the procedure. Unlike drag relieved by venting, this result does not establish trapped upstream hydraulic pressure as the demonstrated cause.
- 88. A** — The prescribed test identifies a pressure-loss route through one injector, making it a strong candidate for the restart condition. Assess the injector and affected cylinder under the procedure. Pressure decay alone would not localize the fault, but this isolation evidence is more specific than a general restart symptom.
- 89. D** — Regenerative braking uses the electric drive's generating function to recover some motion energy under the permitted control conditions. It does not eliminate every need for friction braking or create energy without a corresponding source. Actual availability and blending depend on the vehicle's state and strategy.
- 90. C** — The code identifies a detected condition and directs diagnosis; it is not a universal component-replacement instruction. Power loss, wiring faults and configuration issues can affect communication. Read the applicable definition, status and context, then test the relevant paths before concluding which component or connection requires repair.
- 91. D** — The ground connection must remain mechanically secure and transmit the required current through suitable contact surfaces. Verify it under representative load. Stud fit and a continuity tone can look acceptable while remaining resistance still impairs operation, and unapproved stacked terminals can change the intended assembly condition.
- 92. A** — The test measures loss between chosen points while the circuit carries the relevant current. It helps locate resistance that may be missed by an unloaded check. It does not directly measure battery energy or mechanical travel, and interpretation requires the correct test points, load and circuit specification.
- 93. B** — Bleeding is intended to restore hydraulic actuation, and completion needs the applicable travel and functional checks as well as containment. A filled reservoir or moving pedal can coexist with remaining air or inadequate release. Verify the repaired circuit under the conditions assigned by the procedure.
- 94. C** — Multiply the final mixture volume by the stated fraction: $8 \times 0.40 = 3.2$ L concentrate. The remainder is 4.8 L water under the given assumption. Use the approved formulation and preparation method; this percentage does not qualify a different coolant product for the vehicle.

- 95. A** — The damper resists suspension motion according to its design, helping control oscillation and response. It does not directly set tire pressure, gear ratio or fastener procedure. Inspect its actual function and mounting separately from spring support and other suspension geometry requirements.
- 96. B** — The conductor must suit the actual electrical and physical duty of the circuit. Continuity establishes a path but not current capability or acceptable voltage loss. Choose the specified replacement rather than assuming a connected wire of any size restores the designed power-circuit performance.
- 97. D** — The load-sensitive noise and direct gear-surface damage support localized differential assessment. Inspect associated bearings, contact and lubrication conditions through the procedure. Acceptable wheel checks reduce a common alternative, while the visible pitting provides evidence beyond the general description of a humming sound.
- 98. D** — The control request and upstream supply are present, while loss appears across the loaded relay/output path. Localize resistance or contact performance there before replacing unrelated components. An unloaded voltage result does not establish that the circuit can deliver the solenoid's required current when connected.
- 99. C** — The repaired thermal circuit must retain its fluid and circulate correctly under the applicable procedure. Complete the specified filling and air-removal steps before operating verification. Reservoir level and code clearing do not establish restored coolant flow, and maximum load is not a substitute for the required readiness checks.
- 100. A** — The short persists in the segment without its module and disappears from the remaining network when that segment is separated. This controlled isolation points toward wiring in the segment. Software or module replacement would not correct a passive conductor fault demonstrated independently of those components.
- 101. B** — The original failure has contaminated a connected circuit that can send material back into the repaired transmission. Follow the specified cleaning or replacement requirements. Normal initial shifting does not prove cleanliness, and dilution or a larger hose does not demonstrate removal of the retained debris source.
- 102. A** — The failure is specific to the reverse pressure path with a correct selection signal. Use the hydraulic diagram and prescribed tests to localize that circuit. Normal forward operation weakens a whole-system assumption but does not establish that the reverse valve, passage or engagement supply performs correctly.
- 103. D** — The specified checks identify the connection as the fault area, so assess its actual condition using the high-voltage procedure. Moisture and damage require an approved restoration or replacement, not merely a cleared indication. Bypassing monitoring removes protection while leaving the demonstrated isolation condition unresolved.
- 104. C** — Add the three equal pieces: $3 \times 12 = 36$ mm total specified spacing. This arithmetic applies to the installation given in the stem. It does not authorize arbitrary stacked material as a substitute for another accessory's approved brackets, strength or retention requirements.

105. B — The debris must be removed before it enters the restored cooling system or interferes with the gasket interface. Follow the cleaning and surface requirements. Covering it with sealant or allowing initial circulation transfers the contamination rather than demonstrating a properly prepared repaired assembly.

106. B — An initial running engine does not qualify an improperly seated or retained connector. Restore the specified sealing and latch arrangement and verify the circuit. Tape or unapproved pin bending conceals a mechanical assembly problem that can cause later connection failure or contamination exposure.

107. A — The measured excess pressure and prescribed return-path finding provide a hydraulic explanation that must be resolved before treating the oxygen sensor as the cause. The sensor may accurately report the resulting rich condition. Use the fuel-system diagram and approved tests to distinguish regulator action from the restricted return path, then verify pressure and mixture behaviour after correction. Rich operation alone would not identify this fault, but the independent pressure and isolation evidence strengthen the localization.

108. C — The failed converter test and low bus condition identify the relevant power-conversion path for further diagnosis. Verify command and connections before assigning a component. Available traction energy does not prove the converter delivers low-voltage output, and bus voltage alone cannot justify replacing the entire traction battery.

109. D — The controlled tire-set change resolves the complaint, linking it to the measured rolling mismatch. Use the required matching condition before condemning the transfer case. This evidence does not prove the unit is undamaged, but it supplies a direct operating cause that should be resolved and verified first.

110. D — The switch must report the actual door states and support the related control functions after installation. Verify both conditions under the procedure. Code clearing and fit do not demonstrate accurate switching, while a fixed closed signal conceals a problem and removes the intended response to an open door.

111. C — The retaining feature must be restored using the approved replacement identified by the instructions. Tape, screws or grease do not provide verified connector geometry and retention. Complete engagement checks after assembly so the repaired communication circuit remains correctly connected under normal movement and environmental exposure.

112. B — Variant configuration assigns applicable functions and communication behaviour to the replacement. It must match the actual vehicle equipment. Configuration does not physically repair terminals or prove every input accurate, so required electrical and functional checks remain separate parts of a properly completed module replacement.

113. A — The original symptom is condition-dependent, so verification must cover cold start rather than only a warm static test. A passed joint check confirms its scope but does not prove the remaining

correction cause is resolved. Continue evidence-based diagnosis instead of assuming parts or erasing adaptation to conceal the observation.

114. A — Divide the collected volume by elapsed seconds and multiply by sixty: $90 \div 45 \times 60 = 120$ mL/min. Compare that result with the applicable test's limit under the same conditions. The calculation does not supply a universal acceptable injector return rate.

115. B — The inspection identifies contamination capable of affecting clutch friction, while the measured actuation condition does not support an arbitrary linkage adjustment. Locate the oil source and assess the components under the repair procedure. Replacing friction parts without resolving the source can allow the same slipping condition to return.

116. D — Camshaft timing defines the valve events in relation to the crankshaft and piston cycle. That relationship affects gas exchange and engine operation. It does not directly establish unrelated tire dimensions, rectifier polarity or pressure-cap force, each governed by a different component or system function.

117. C — The known retained air and failed flow check show that commanded pumping has not established the required circulation after service. Complete the applicable fill and bleed method and verify operation. The thermal warning alone does not localize a battery defect, and greater charging load is not an authorized air-removal process.

118. A — The supplied repair requirement defines the acceptable restoration method for that restraint circuit. Use the prescribed assembly and checks. Conductor appearance does not establish splice authorization, and simulation or taping cannot replace the intended connection and verified function of the installed SRS system.

119. C — Multiply the measured voltage loss by current: $0.20 \times 15 = 3$ W dissipated in that path. This describes the localized loss rather than total accessory power. Circuit acceptance still depends on the specified drop and test conditions, not the calculated dissipation alone.

120. D — The actual temperature and module substitution response separate the thermal condition from the indicated fault. Focus on the sensor and relevant connection before replacing the thermostat. A cold display alone cannot establish low engine temperature when an independent measurement shows the engine is operating normally.

121. B — Free movement addresses one aspect of the repair while secure specified mounting remains unverified. Complete the required fastening and operating checks before release. Road operation is not a controlled fastener test, and arbitrary extra tightening cannot demonstrate that the mounting meets its assigned assembly conditions.

122. B — The battery's actual condition governs appropriate storage and handling precautions. Follow its instructions and the shop's authorized process, including terminal and access controls. Floor convenience, conductive covering or unverified charging cannot establish a safe storage condition for an electrified-vehicle battery assembly.

123. D — The hydraulic repair does not remove the independently demonstrated slide seizure. Resolve both fault paths and verify release. More than one condition can contribute to drag, so completing one correct repair is not proof that every mechanical and hydraulic requirement of the assembly has been restored.

124. A — Apply reduction and supplied efficiency: $160 \times 3 \times 0.90 = 432 \text{ N}\cdot\text{m}$. The 480 result neglects the specified losses, while dividing by the ratio would not describe torque multiplication through this reduction. This is the simplified duty given by the problem.

125. C — The failed retention check identifies an unfinished mechanical acceptance condition. Restore the approved parts and engagement under the procedure. Appearance does not prove secure retention, and driving to seat an uncertain assembly can expose the driveline to movement that the retaining device is intended to prevent.