

PRACTICE EXAM 13: CANADIAN 310T TRUCK AND COACH TECHNICIAN SIMULATION (135 QUESTIONS)

This practice exam contains 135 multiple-choice questions, each with four options (A, B, C, and D), matching the format of the Interprovincial Red Seal exam for this trade. Allow about four hours and work without manuals or notes. Choose the single best answer for each question. A score of 70 percent, or 95 correct answers, is the pass mark. Check your answers against the key and explanations at the end of the exam.

1. A windshield is replaced on a coach, and the driver wants to leave immediately. What must the technician consider?
 - A. The adhesive needs the maker's safe drive-away time before the vehicle moves
 - B. Adhesive cures instantly so the glass can carry airbag loads at once
 - C. The glass only needs the wiper arms installed before use
 - D. The sealant must be cured by running the heater at full power

2. A tractor shows 12.6 volts at the batteries at 1,500 rpm with lights and fans on, and the alternator belt has a glazed surface. What should be inspected first?
 - A. The engine oil filter housing for a small external leak at the base
 - B. The belt and tensioner, because slipping reduces alternator speed
 - C. The clutch pedal linkage for excess free play at the top
 - D. The hubs for correct bearing end play and the lube level

3. When inspecting a fifth wheel, which finding means the coupling is unsafe?
 - A. A light film of fresh grease on the plate and its slide surface
 - B. A small amount of paint wear on the plate edge and the apron
 - C. A slight tilt of the plate on its pivot pins and its brackets

D. Excess jaw gap around the kingpin, or a lock that will not engage

4. After a fuel filter change on a remote highway, an engine cranks but will not start. What is the most likely cause?

A. Air in the system, so prime the filter and check suction side connections

B. The filter is too clean and needs a few hundred kilometres of use

C. The ECM erases itself after any filter change

D. The exhaust brake closed itself while the key was off

5. During a remote roadside inspection, a technician finds two loose mounting nuts on a brake chamber and a stud with damaged threads. What is the correct repair?

A. Add a flat washer under each loose nut and tighten by feel

B. Replace the damaged stud and torque all nuts to specification

C. Weld the chamber to its bracket so the nuts cannot move

D. Leave the chamber as it is and monitor stroke each day

6. A range-shift transmission will not shift between low and high range, though all splitter positions work. What should be inspected first?

A. The engine oil pressure sender and its wiring harness

B. The coolant hoses on the heater circuit under the cab

C. The air supply, range valve, and the range cylinder line

D. The brake lining thickness on the rear axle brakes

7. The trailer ABS warning lamp stays on after the tractor ignition is switched on. What should be checked first?

A. The windshield washer fluid level in the tractor cab reservoir

B. The cab heater blower speed settings and the fan switch

- C. The tire tread depth on the steer axle and drive axle
- D. Power and ground at the trailer plug and module wiring

8. A wheel end is being reassembled after a bearing replacement. How is bearing end play set?

- A. Tighten the nut until the wheel cannot turn and back off a full turn
- B. Pack the bearing with so much grease that it cannot move
- C. Adjust the nut per the maker and verify end play with a dial indicator
- D. Install the nut by feel using a long breaker bar

9. During a brake inspection, a drum measures 0.8 mm beyond the maximum diameter stamped on it. What should the technician do?

- A. Turn the drum again to reach a smooth surface and reuse it
- B. Replace the drum, because the stamped limit is the maximum safe diameter
- C. Reuse the drum with a thicker lining to make up the difference
- D. Leave it in service and check it again at the next oil change

10. A crew is warming a frozen engine in an unvented remote shop using a propane heater. Which hazard must be controlled before anyone starts the engine inside?

- A. Carbon monoxide buildup, so the shop needs fresh air
- B. Static electricity from the heater hose, so the truck must be grounded
- C. Low oxygen in the tires, so the pressure must be rechecked indoors
- D. Condensation on the fuel tank, so the cap must be loosened first

11. A manual transmission is being refilled before a trip to a very cold region. What is the correct fill practice?

- A. Overfill to the top of the breather to give extra protection
- B. Use hydraulic oil from the shop because it is thinner

- C. Use fresh engine oil of any grade because it is cheaper
- D. Use the approved grade and fill to the fill opening bottom

12. An engine coolant temperature sensor circuit reads 5.0 volts on the signal wire with the engine hot and the connector attached. What does this indicate?

- A. An open sensor circuit, so the module sees maximum voltage
- B. A short to ground in the harness that lowers the signal
- C. A normal reading because a hot sensor reads a higher voltage
- D. A faulty alternator raising the system voltage to five volts

13. During cranking, a starter draws 400 amperes through a battery ground cable with a resistance of 0.0006 ohm. What is the voltage drop across the cable?

- A. 0.12 volt
- B. 0.24 volt
- C. 0.48 volt
- D. 2.4 volts

14. A block heater on a truck is rated at 1,500 watts and is plugged into a 120 volt supply. What current does it draw?

- A. 8.0 amperes
- B. 18.0 amperes
- C. 12.5 amperes
- D. 180 amperes

15. The evaporator of an air conditioning system freezes over, and airflow from the vents drops. What should be checked first?

- A. The rear axle ratio and the carrier bearing

- B. The engine brake lash adjustment on the head
- C. The trailer gladhand seals and coupling
- D. The cabin filter, blower airflow, and cycling control

16. During a liner replacement, why does the technician measure liner standout with a dial indicator before torquing the head?

- A. It sets the piston-to-head clearance at the bottom of the stroke
- B. It sets the correct connecting rod bearing oil clearance
- C. It confirms that the cylinder bore is perfectly round
- D. Wrong protrusion can crush the gasket seal or let coolant leak

17. A technician finds that a hydraulic system has failed after repeated hose changes and the fluid is cloudy with particles. What is the proper next step?

- A. Add fresh fluid on top of the old fluid and continue
- B. Replace the pump only and keep the old fluid
- C. Find the source, flush the system, and replace filter and fluid
- D. Remove the filter so that the particles can pass through

18. A technician sets toe on a steer axle. Which measurement is taken?

- A. The difference between front and rear tire distances at spindle height
- B. The difference in tire pressure between the left and right sides
- C. The angle of the fifth wheel to the frame rails
- D. The torque on the hub nut at the spindle

19. A hybrid truck with regenerative braking has low friction brake wear, and the technician finds rusted rotors. What does this suggest?

- A. The regenerative system has failed and must be replaced

- B. Light friction brake use allows corrosion, so inspect them
- C. The brakes are too strong and need to be reduced
- D. The vehicle has never needed any brake service

20. A rhythmic vibration increases with road speed but does not change with engine speed in a given gear. Which area should be inspected first?

- A. The driveshaft balance and U-joints
- B. The air compressor discharge line and fittings
- C. The coolant overflow bottle and its cap
- D. The cab mounted mirrors and brackets

21. On a long mountain descent, the brakes lose effectiveness and the drums are very hot. What best explains this?

- A. Low washer fluid reducing the friction in the linings
- B. Too much air pressure in the tires that locks the brakes
- C. Fade from overheated drums that lose friction and expand
- D. A stuck fan clutch that adds extra friction to the drums

22. The hydraulic fluid on a truck-mounted crane overheats during normal work. Which condition could be responsible?

- A. A full washer fluid reservoir in the cab
- B. A low-set relief valve or a dirty cooler
- C. Correct tire pressure on all axles of the unit
- D. A tight air dryer cartridge on the brake system

23. A group 31 battery reads 12.1 volts with the engine off after sitting overnight. What should the technician do before load testing?

- A. Load test it immediately, because a low reading proves it is good
- B. Add water to the cells until the voltage rises to 13 volts
- C. Replace the battery without any test because 12.1 volts means failure
- D. Recharge it fully, because a load test on a low charge is false

24. Before moving a trailer with sliding tandems, what must the technician confirm?

- A. The locking pins are fully extended on both sides
- B. The tires are inflated to the maximum on the sidewall
- C. The landing gear is lowered halfway to share the load
- D. The marker lights are turned off to save the battery

25. When greasing a universal joint with fittings on the cross, how does the technician know the joint is properly filled?

- A. The grease gun handle becomes impossible to move after one stroke
- B. The shaft has stopped turning so the joint is certainly full
- C. The first stroke of the gun is complete, whatever the cap seals show
- D. Fresh grease appears at all four cap seals without distorting them

26. An engine derates and sets a DEF quality fault after the tank was topped up from a container of unknown liquid. Which test confirms the problem?

- A. Check the DEF with a hydrometer designed for coolant and ignore low readings
- B. Check DEF with a refractometer, and drain and refill if out of range
- C. Add extra urea crystals to the tank until the derate clears
- D. Disconnect the DEF heater so that the fluid stops dosing altogether

27. A technician charges an AGM battery with a conventional charger set to a high voltage. What is the risk?

- A. Undercharging, because an AGM battery will not accept any charge current
- B. The battery will freeze solid because of the heat of the charge current
- C. Overcharging vents gas and damages it, so use an AGM charger
- D. The charger will reverse the polarity of the plates

28. A tractor with an air suspension sits low on one side, and the air bag is fully inflated. Which area should be checked next?

- A. The windshield wiper arm and blade pressure setting
- B. The leveling valve linkage
- C. The brake chamber return spring and pushrod
- D. The cab heater core flow and hose routing

29. During a brake inspection, a technician finds that the S-cam shaft can be moved up and down by hand at the bracket. What does this indicate?

- A. Correct clearance that allows the shaft to float freely
- B. A weak return spring in the brake chamber
- C. Normal expansion of the drum from heat
- D. Worn camshaft bushings that need replacement

30. A tractor has a ticking noise at cold start that fades as the engine warms, with a soot streak at one manifold port. What is the likely cause?

- A. An exhaust leak at the manifold gasket or a cracked manifold
- B. A collapsed lifter on the camshaft follower
- C. A loose flywheel bolt striking the housing
- D. A worn fan belt idler bearing in the front accessory drive

31. A technician finishes tightening cylinder head bolts and will store a click-type torque wrench for the winter. How should it be stored?

- A. Set to its highest value so the spring remains tight and stable
- B. Left at the last torque used so it is ready for the same job
- C. Set to its lowest scale value so the internal spring is not left loaded
- D. Locked at zero with the handle clamped to the housing

32. A truck has an intermittent no-start that disappears whenever the harness near the engine module is moved. Which test method best finds the fault?

- A. Replace the engine module and see whether the fault returns
- B. Wiggle the harness and connectors while watching a meter or scan tool for changes
- C. Clear the stored codes and wait for the problem to come back
- D. Measure the battery voltage once with the key switched off

33. A truck sets a fault for the variable geometry turbocharger actuator with poor boost response. What should be done before replacing the turbocharger?

- A. Replace the turbocharger because actuator codes always mean a failed core
- B. Reprogram the engine controller before any physical inspection of the parts
- C. Check actuator wiring and connector, then test the actuator and vanes
- D. Install a larger exhaust pipe to reduce the exhaust back pressure

34. A crack has formed in the top flange of a frame rail near a crossmember. What does good practice require before any repair?

- A. Follow the maker's frame repair instructions on welding, reinforcements, and allowed locations
- B. Weld across the flange with any available rod and grind it smooth
- C. Drill the flange several times so the crack spreads evenly
- D. Paint the crack to prevent further movement

35. A truck with a manual transmission slips under load, and the pedal has no free play at the top of its travel. What is the most likely cause?

- A. The transmission lube level is too high for the cold weather conditions
- B. The drive axle ratio is too low for the load being hauled
- C. The engine thermostat opens at too low a temperature in winter
- D. The release bearing is riding the fingers from wear or poor adjustment

36. A compressor keeps building pressure past the governor cut-out and the safety valve opens. Which part is the most likely cause?

- A. A leaking glad hand gasket on the trailer supply line coupling
- B. A faulty governor or unloader that keeps pumping
- C. A worn slack adjuster on the left rear brake chamber
- D. A weak low-pressure warning switch in the dash panel

37. A technician must discharge the air conditioning system to replace a hose. What is the correct procedure?

- A. Open a fitting and vent the refrigerant outside the shop
- B. Heat the line to boil off the refrigerant
- C. Pour it into a drain so it evaporates safely
- D. Recover the refrigerant with an approved machine as a certified person

38. A technician replaces a radiator cap with a lower-pressure cap than specified on a heavily loaded truck. What is the likely result?

- A. Coolant circulation speeds up and the engine runs cooler
- B. The thermostat opens earlier and increases the heat output
- C. The boiling point drops, so coolant is lost and the engine overheats
- D. The expansion tank empties from the pressure and the cap seals tighter

39. A scan tool cannot communicate with the engine module, but it communicates with the transmission and ABS modules without trouble. What should be checked first?

- A. Power, ground, and ignition feed at the engine module connector
- B. The tire pressure in every steer and drive position on the axles
- C. The oil level in the front differential carrier housing
- D. The washer pump and the wiper motor ground circuit

40. A hydraulic cylinder rod on a truck-mounted loader is pitted and scored, and oil weeps past the rod seal after every new seal is fitted. What is the correct repair?

- A. Fit a thicker seal so that it can fill the pits in the rod
- B. Polish the rod with coarse sandpaper until it looks smooth
- C. Replace or re-chrome the rod, because the damaged surface will cut any seal
- D. Add sealant to the fluid so that the weep seals itself

41. A steer axle truck wanders on the highway, and the technician finds noticeable play in the tie rod ends. What is the proper repair?

- A. Tighten the steering wheel nut to remove the play
- B. Add a heavier oil to the axle to dampen the play
- C. Increase the steer tire pressure to stiffen the steering
- D. Replace the worn tie rod ends, then check the alignment

42. Brake linings on one axle are saturated with grease from a leaking hub seal. What is the correct repair?

- A. Wash the linings with solvent and return them to service
- B. Replace linings on both ends of the axle and fix the seal
- C. Replace only the contaminated side lining to save time
- D. Burn off the grease by dragging the brakes during the trip

43. A driver reports that the grab handle on a cab door pillar moves when pulled, and the weld at the base is cracked. What should the technician do?

- A. Repair or replace the handle mounting so it is solid before the truck is used
- B. Tighten the handle bolts and ignore the cracked weld
- C. Tell the driver to use the steering wheel to climb in
- D. Fill the crack with body filler and repaint the area

44. A transmission temperature gauge reads high on a long climb, and the cooler lines feel cool at the outlet. What should the technician suspect?

- A. A weak clutch brake on the manual transmission
- B. A restricted cooler or cooler line
- C. A loose battery clamp at the positive terminal
- D. A low tire pressure on the trailer axle

45. A truck drains its batteries overnight, and a key-off current of 3 amperes remains after the modules should have gone to sleep. What is the best method to find the draw?

- A. Connect a voltmeter across the batteries and pull each fuse until voltage rises
- B. Replace the alternator since it produces the draw at idle
- C. Connect an ammeter in series and pull fuses one at a time
- D. Disconnect the ground strap from the frame and measure the starter

46. A trailer's brakes are dragging after being parked in freezing weather, and the wheels are hot after a short trip. What should be inspected?

- A. The trailer license plate bracket and its mounting bolts
- B. The mud flap hanger bolts and the flap brackets
- C. The reefer unit fuel cap and the fuel tank vent
- D. The slack adjusters, cam shafts, and spring brake release

47. How should pushrod stroke be measured on a Type 30 brake chamber during an inspection?

- A. Chock wheels, mark the rod released, then apply fully and measure travel
- B. Measure the pushrod length with the chamber removed from the bracket
- C. Apply only the parking brake and compare the marks on the rod
- D. Measure the gap between the lining and the drum while the wheel spins

48. A driver reports a fuel leak at a remote camp, and the technician repairs it with a temporary fitting. What belongs on the repair order afterward?

- A. Complaint, cause found, and correction made, including temporary status
- B. Only the parts used, since the customer cares about cost
- C. Only the labour hours, since parts are listed by the supplier
- D. A general note that the unit was inspected and is fine

49. Oil pressure on a highway tractor is normal when cold but very low at hot idle. What should the technician do first?

- A. Replace the oil pump immediately because it is the usual cause
- B. Overhaul the engine at once since low pressure always means bearings
- C. Confirm the reading with a mechanical gauge before diagnosing wear
- D. Install a heavier relief valve spring to raise the idle pressure

50. After an incident, a technician checks a frame for sway and diagonal misalignment. Which method is used?

- A. Compare the tire pressures on both sides of the truck
- B. Compare the oil temperature in each drive axle
- C. Compare the brake lining thickness on each wheel end
- D. Compare diagonal measurements between frame points to tolerance

51. While preparing to lift a tractor at a roadside pullout, a technician finds the hook on a chain sling has a missing safety latch. What is the correct action?

- A. Tie the hook closed with wire and lift only half the rated load
- B. Tag it out of service and use a latched sling
- C. Use the sling but keep every person well clear of the load path
- D. Weld a short bar across the hook mouth to replace the latch

52. Coolant drips from the weep hole of a water pump on a truck stranded far from a shop. What does this indicate?

- A. The pump has too much coolant and the weep hole drains the excess
- B. The thermostat is stuck closed and forcing coolant out of the pump
- C. The radiator cap is faulty and sending coolant to the pump bearing
- D. The pump shaft seal has failed and the pump needs replacement

53. A truck blows cold air from the heater at idle but warms up when the engine is revved, and the coolant level is low. What is the likely cause?

- A. A blown fuse in the radio circuit under the dash panel
- B. A tired battery that cannot power the heater switch
- C. Low coolant and air in the core, so refill and bleed it
- D. A cracked exhaust pipe near the cab floor

54. A drive axle whines under acceleration but is quiet on the coast. Which area should be examined?

- A. Wheel stud torque on the steer axle wheels
- B. Ring and pinion pattern and backlash
- C. The trailer landing gear crank and gearbox
- D. The air dryer purge valve and heater

55. A technician cleans heavy white corrosion from battery terminals on a truck that has been in a salt-laden environment. What is the correct method?

- A. Neutralize with baking soda solution, wearing eye protection and gloves, then rinse
- B. Pour fresh sulphuric acid on the terminals to dissolve the corrosion
- C. Scrape the terminals dry with a bare hand and rinse with soap
- D. Hit the terminal clamps with a hammer to break the crust

56. The oil in an oil-lubricated hub looks milky when viewed through the hub cap window. What does this indicate?

- A. The oil is fresh and is correctly mixed for this kind of hub
- B. The oil is simply too cold and needs more additive added
- C. The hub is overfilled and should be drained halfway down
- D. Water has entered, so find the source and change the oil

57. A driver cannot select first gear from a stop without grinding, but all gears shift well while moving. Which part is the most likely cause?

- A. A blocked fuel filter that limits the engine speed
- B. A leaking steering gear seal that lowers the system pressure
- C. A worn clutch brake that no longer stops the input shaft
- D. A loose trailer light plug that causes a short

58. A technician finds oil in the wet tank and a soaked dryer cartridge on a truck that runs mostly on dusty roads. What should be inspected on the compressor side?

- A. The parking brake valve for a stuck plunger
- B. The compressor intake and its filter for restriction
- C. The brake chamber diaphragms for a small leak
- D. The tire valve stems for loose caps

59. A battery electric truck in very cold weather shows a lower driving range and a slower charge. What is the best explanation?

- A. Cold raises battery capacity so the truck charges too quickly
- B. Cold reduces battery performance, so precondition the pack before charging
- C. The charging cable becomes longer in winter and loses current
- D. The electric motor needs hot coolant to produce any torque

60. All the trailer lights dim when the brake lights are applied at the connector. What is the most probable cause?

- A. A poor ground at the trailer plug
- B. A low washer fluid level in the tractor reservoir
- C. Over inflated trailer tires on the rear tandem axles
- D. A cracked windshield on the tractor driver side

61. After weeks of cold-weather idling, a truck shows a high DPF soot load. What is the best response?

- A. Do a parked regeneration per the maker and find why exhaust ran cool
- B. Remove the filter and install a straight pipe to avoid the issue
- C. Raise the idle speed permanently so that regeneration never has to start
- D. Wash the filter with water while it is still hot from running

62. A cab door drops at the rear edge and will not latch cleanly. After hinge pin wear is ruled out, what is the correct adjustment?

- A. Slam the door repeatedly until the latch catches the striker
- B. Bend the door skin upward with a pry bar at the bottom edge
- C. Grind the latch down so it fits through the striker opening
- D. Adjust the door hinge and the striker so the latch aligns without forcing it

63. A fifth wheel plate is dry and the trailer is steering with a lot of noise and bind. What should the technician do?

- A. Remove all the grease so the plate runs dry in the cold
- B. Apply motor oil to the kingpin only, and leave the plate dry
- C. Clean the plate, apply the recommended grease, and check the mounting
- D. Tighten the jaw until the kingpin cannot move at all

64. On a very cold morning, a manual transmission shifts stiffly until the truck has been driven a few kilometres. What is the best explanation?

- A. The clutch brake has frozen to the flywheel
- B. Cold, thick gear oil slows synchronizers
- C. The axle ratio is wrong for cold weather
- D. The steering gear fluid is leaking into the transmission

65. The instrument panel voltage swings up and down as engine speed changes, and the batteries stay at a normal charge. What is the most likely cause?

- A. Weak piston rings that let the cylinders lose compression
- B. An overfilled coolant recovery bottle in the engine bay
- C. Worn leaf spring bushings that shake the cab and the dash
- D. Low charge or high resistance at connections

66. A hydraulic system on a plow truck must operate at minus 30 degrees Celsius. Which fluid choice is best?

- A. A straight heavy gear oil that has a very high pour point
- B. Any engine oil that is on the shop shelf today
- C. A multigrade oil with a high viscosity index and low pour point
- D. A mix of diesel fuel and water in equal parts

67. A swing door on a cargo trailer will not latch because the hinge is binding in freezing weather. What is the right approach?

- A. Clean and lubricate the hinges, then check the latch
- B. Force the door with a pry bar until it latches
- C. Remove the hinge pins and leave the door hanging
- D. Paint the hinge so the water cannot reach it

68. A hydraulic oil sample from a crane truck shows high water content and a cloudy appearance. What is the correct response?

- A. Continue using the oil because water does not harm hydraulic parts
- B. Top up with fresh oil each week until the cloudiness clears
- C. Add antifreeze to the reservoir to bind the water in solution
- D. Replace the fluid and filter, and find where the water is entering

69. An A/C compressor clutch does not engage, but the refrigerant charge is correct and the belt turns the pulley freely. What should be checked first?

- A. The cab air filter, since it controls the clutch coil
- B. The clutch coil circuit power, fuse, relay, and low-pressure cutoff switch
- C. The wheel bearing end play on the steer axle
- D. The exhaust back pressure at the turbocharger outlet

70. Before loosening a high-pressure common rail fuel line for service, what must the technician do?

- A. Shut off the engine and wait the specified time for pressure to bleed
- B. Run the engine at high idle so the line pressure is at its lowest
- C. Loosen the line quickly with a rag around it to catch the spray
- D. Heat the line with a torch to soften the fitting

71. A brake hose has an abraded outer cover with the reinforcing braid visible. What is the correct action?

- A. Wrap the exposed area with electrical tape and continue
- B. Spray the hose with rubber sealant to protect the braid
- C. Replace the hose assembly with one of the correct type and length
- D. Reposition the hose a little so that the damage faces inward

72. A drive axle leaks oil from both axle shaft seals and the pinion seal after a long cold run. What should be inspected first?

- A. The axle breather, which may be plugged
- B. The air tank drain valve for a leak
- C. The fifth wheel mounting bolts for tightness
- D. The wiper motor for a worn brush

73. A starter pinion grinds against the flywheel a few seconds after the engine has started. What is the likely cause?

- A. The alternator is charging too slowly to engage the fan
- B. The starter solenoid or start circuit keeps it engaged
- C. The turbocharger is surging at idle speed
- D. The air filter has too little restriction at idle

74. Before arc welding a cracked crossmember on a truck at a remote worksite, which step best protects the electronic control modules?

- A. Leave the batteries connected so the modules keep their memory
- B. Clamp the ground to the steering column to complete the circuit
- C. Weld at low amperage while the ignition key stays in the run position
- D. Disconnect the battery cables and place the ground clamp close to the weld

75. A refrigerated trailer unit will not cool, the suction pressure is low, and bubbles show in the sight glass. What is the most likely condition?

- A. The unit has too much oil in the compressor sump
- B. The condenser fan is rotating too slowly at low speed
- C. A low refrigerant charge, so find the leak
- D. The thermostat set point is too high for the load

76. A technician tightens the wheel nuts on a hub-piloted wheel. What is the correct procedure?

- A. Use a star pattern in stages to specified torque, then recheck later
- B. Tighten the nuts in a circle in one pass with an impact wrench
- C. Tighten each nut as hard as possible and skip the recheck
- D. Tighten only the top nuts and leave the lower ones loose

77. The power steering fluid is foamy and the pump whines. Which cause is the most likely?

- A. Overinflated steer tires that push air into the system
- B. A cracked fifth wheel plate that vibrates the hose
- C. Air entering a loose suction hose
- D. A worn air dryer cartridge in the brake system

78. In midwinter an engine warms very slowly, cab heat is poor, and the temperature gauge stays low on the highway. Which component is the most likely cause?

- A. A blocked radiator that restricts the coolant flow through the core
- B. A water pump impeller that has come loose and spins free on its shaft
- C. A fan clutch stuck in the locked position that draws constant air
- D. A thermostat stuck open, so coolant always flows through the radiator

79. A tractor in winter service fills a bucket of water from the wet tank daily, and the dryer purges only weakly. What is the most likely repair?

- A. Add methanol to the supply tank every morning to absorb the water

- B. Replace the saturated desiccant cartridge and check the purge valve and heater
- C. Drain the dryer and leave the purge valve open permanently
- D. Fit a larger compressor to push the moisture through the system

80. A technician wants to measure the current flowing through a circuit using a digital multimeter. How should the meter be connected?

- A. Across the load in parallel with the leads in the current jacks
- B. Across the battery terminals using the resistance setting
- C. In series with the circuit, using the current jacks and correct range
- D. Clamped around the battery post using the voltage setting

81. Oil pressure, boost, and rail pressure sensors all set low voltage faults at the same time. What common cause should be suspected?

- A. A low tire pressure on the steer axle
- B. A leak in the windshield washer line
- C. A loose bolt on the cab step
- D. A short on the shared reference

82. A truck with a clutch air assist cylinder has a pedal that returns slowly after being pressed and feels sticky. What should the technician inspect first?

- A. The release bearing, spinning only with pedal down
- B. The fifth wheel mounting bolts for loose hardware
- C. The axle breather for a blockage in the housing
- D. The coolant recovery bottle level and the cap seal

83. A truck takes two minutes to build from 585 kPa to 690 kPa at fast idle, though the system holds pressure when parked. What is the likely cause?

- A. A worn wiper blade on the driver side
- B. A worn compressor or a restricted discharge line
- C. A loose bolt on the front spring hanger
- D. A sticking turn signal switch in the steering column

84. An oil analysis report shows rising copper and lead with iron and silicon normal. Which engine component is the most likely source?

- A. Cylinder liners wearing from dust ingested past the air filter
- B. Piston rings scuffing against dry liner walls after a cold start
- C. Bearing shells wearing in the main or connecting rod journals
- D. Valve guides wearing because of an oil-starved camshaft

85. A technician checks the tire pressures of a truck that has sat overnight at minus 25 degrees Celsius. How should the readings be treated?

- A. Add pressure until the gauge reads the cold value plus 20 percent
- B. They are cold values, so inflate to the placard cold pressure
- C. Release pressure because tires are always over inflated in cold weather
- D. Ignore the readings because winter tires do not need pressure checks

86. A technician needs to support a trailer corner on frozen gravel at a remote site. Which practice best prevents the stand from sinking or tipping?

- A. Place the stand on a wide solid base such as plate or timber on firm ground
- B. Set the stand directly on the ice, because frozen ground is the hardest surface
- C. Use a hydraulic bottle jack alone, because it has a wide base and a rated load
- D. Stack several wheel chocks under the stand to raise it to the correct height

87. A hydraulic driveline retarder gives weak braking, and the fluid level and temperature are normal. What should be checked next?

- A. The trailer gladhand seals for a small air leak
- B. The wiper blades for streaking and wear on the glass
- C. The cab seat air suspension for ride height
- D. The control valve and the signal that fills the retarder

88. A loaded truck pulls to the right during moderate brake applications. What does this most likely indicate?

- A. The left tires have more air pressure than the right tires
- B. The air compressor is building pressure more slowly than normal
- C. The parking brake valve is slightly open on the left
- D. The right brakes are applying harder than the left brakes

89. A tractor shows heavy oil mist from the crankcase breather and a rise in crankcase pressure at full load. Which condition is most likely?

- A. Excess blow-by past worn rings and liners
- B. A restricted air filter limiting the intake airflow
- C. A weak thermostat holding the coolant temperature low
- D. A cracked exhaust manifold leaking ahead of the turbocharger

90. A steering gear has excessive free play at the wheel, but the linkage and ball joints are tight. What adjustment is made?

- A. Add washers under the tie rod clamp to raise the arm
- B. Adjust the gear lash at the sector adjuster to specification
- C. Tighten the drag link to the maximum torque available
- D. Loosen the pitman arm nut to let the arm float

91. A scan tool shows an inactive fault code with an occurrence count of one for a wheel speed sensor. What does this usually mean?

- A. The sensor is permanently failed and must be replaced at once
- B. The code is a software error that can always be ignored
- C. It happened once and is gone, so check for an intermittent
- D. The vehicle is in limp mode and cannot be driven

92. A hydraulic cylinder with a 100 mm bore is supplied with 48 litres per minute of oil. About how fast does it extend?

- A. 5.09 cm/s
- B. 20.37 cm/s
- C. 10.19 cm/s
- D. 40.74 cm/s

93. In deep cold, a cab door is frozen shut. How should the technician open it without damage?

- A. Pull on the door with a chain tied to another vehicle nearby
- B. Warm the seal gently or use de-icer, then open and lubricate it
- C. Pour boiling water over the glass and the door seal itself
- D. Strike the door edge with a hammer to break the ice

94. An engine shows milky oil on the dipstick and a falling coolant level, but the head gasket pressure test passes. What is the next logical check?

- A. Pressure test the oil cooler core for an internal leak
- B. Replace the radiator cap because it holds coolant pressure
- C. Change the thermostat because it controls oil temperature
- D. Flush the fuel system because water has entered the fuel

95. What is the best way to repair a damaged wire in a weather-exposed truck harness at a remote site?

- A. Twist the wires together and wrap them with cloth tape

- B. Wrap the bare wires with aluminum foil to protect the strands
- C. Leave the splice open so it can dry out in the air
- D. Use a crimped sealed splice or adhesive-lined heat shrink connector

96. A heater core inlet hose is hot, but the outlet hose is cool. What does this indicate?

- A. The heater core is working as it should be
- B. The thermostat is stuck wide open all the time
- C. The core is plugged and needs flushing or replacement
- D. The blower motor is spinning too fast for the setting

97. A technician must work on the orange cables of a hybrid truck. Which sequence is correct?

- A. Cut the orange cables first so that the whole system is dead
- B. Trust the key being off and start work without any further checks
- C. Wear leather gloves and test with a test lamp from the shop
- D. Disable HV, wait, then prove zero volts with a rated meter

98. What is the correct way to connect a trailer to the tractor air lines?

- A. Connect both lines to either coupling because the colours are only decoration
- B. Check gladhand seals, couple supply and service lines correctly, and confirm they lock
- C. Couple the lines first and then fill the trailer from the shop air
- D. Leave one coupling unused to allow the pressure to equalize

99. A compression-release engine brake is weak, but the engine dash shows no faults. Which service item should be checked?

- A. Brake lash on the engine brake slave pistons per the maker
- B. The fluid level in the transmission retarder reservoir on the driveline
- C. The clutch pedal free play at the release bearing and linkage

D. The tire pressure on the drive axles and the steer axle tires

100. Steer tires show feathered wear across the tread, with sharp edges on one side of each rib. What is the most likely cause?

- A. Too much oil in the wheel hub cavity
- B. A worn air compressor on the engine
- C. Incorrect toe dragging the tire sideways
- D. A broken seat mount in the cab floor

101. A transmission sets a shift solenoid fault, but the transmission shifts normally. What should the technician do first?

- A. Check the solenoid wiring, connector, and circuit with a meter first
- B. Replace the valve body at once because a code means it has failed
- C. Clear the code and tell the driver it will not return
- D. Remove the transmission and inspect the clutch packs

102. Several LED marker lamps on a trailer are dim or out after a wiring repair. What is the likely cause?

- A. Over inflated trailer tires on the rear axle
- B. A poor ground or high resistance joint
- C. A cracked coupler on the landing gear leg
- D. Excess grease on the fifth wheel plate

103. An apprentice is about to start work on a starter circuit without disconnecting the batteries, saying the job is only a minute long. What should the journey person do?

- A. Let the apprentice proceed but stay close enough to help quickly
- B. Take over silently and finish the job without discussing it

- C. Allow the shortcut because the battery voltage is only 12 volts
- D. Stop the job, explain the hazard, and isolate the batteries first

104. An ABS warning lamp stays on with a wheel speed sensor fault that occurs only above highway speed. What is the best first inspection?

- A. Replace the ECU and the whole ABS valve assembly
- B. Increase the air pressure in the supply tank to improve the signal
- C. Remove the sensor and operate the wheel without it
- D. Check the sensor clip, gap, tone ring, and connector

105. A 20 ampere fuse keeps blowing on a lighting circuit, and a driver suggests installing a 40 ampere fuse. What is the correct action?

- A. Install the 40 ampere fuse because the wire can handle more
- B. Bypass the fuse with a jumper wire for the trip
- C. Find and repair the short, and keep the specified fuse rating
- D. Replace the fuse with a circuit breaker of a larger size

106. A technician installs a new hydraulic hose with a JIC 37 degree fitting. What is the correct practice?

- A. Wrap thread tape on the flare to improve the seal
- B. Tighten to the specified torque without twisting the hose
- C. Tighten it as far as possible with a long pipe
- D. Install the hose twisted so that it stays in place

107. A truck shudders on engagement, and the clutch disc is found with an oily glaze. Which source of oil should be checked during the repair?

- A. The engine rear main seal and the transmission input seal

- B. The front axle hub seal on the passenger side
- C. The oil filler cap on the valve cover
- D. The fuel return line at the tank outlet

108. A coolant test strip shows low nitrite on an engine that uses conventional coolant requiring supplemental additives. What is the correct action?

- A. Add the specified supplemental coolant additive in the correct amount
- B. Add more antifreeze until the freeze point reaches minus 60 degrees
- C. Drain the system and refill with plain water to reset the chemistry
- D. Ignore the result because additives only matter in warm climates

109. A truck develops a heavy shake through the cab floor at idle, and the cab mount rubber is found torn. What is the correct repair?

- A. Add a clamp across the torn mount to keep the cab level
- B. Fill the torn rubber with sealant and leave it to cure
- C. Replace the damaged cab mounts and torque the hardware to specification
- D. Remove the mount and bolt the cab directly to the frame

110. A refrigerated trailer's diesel engine cranks slowly in the cold and will not start. What should the technician check first?

- A. The trailer tire pressure and the landing gear height
- B. The tractor air dryer cartridge and the purge valve
- C. The trailer door seals and the rear lamps
- D. The unit battery, connections, and glow plug circuit

111. Four 12 volt batteries are wired in parallel on a heavy-duty truck. What do they provide together?

- A. Forty-eight volts with the amp-hour capacity of a single battery

- B. Twelve volts with the amp-hour capacity of all four added
- C. Twenty-four volts with the capacity of two batteries only
- D. Twelve volts with the capacity of a single battery

112. A fifth wheel mounting bracket shows fresh cracks near the weld on the frame. What should be done?

- A. Remove it from service and repair or replace it per the maker
- B. Add another weld pass and keep hauling the load on the route
- C. Wait until the crack grows and then paint it over
- D. Reduce the trailer load by ten percent only for now

113. A transmission output shaft seal leaks gear oil onto the driveline, and the yoke has a worn groove where the lip rides. What is the best repair?

- A. Install a new seal over the groove and add sealant to the lip
- B. Use a thicker gear oil so the leak slows down
- C. Replace the seal and fit a repair sleeve or new yoke to give a smooth sealing surface
- D. Tighten the yoke nut beyond specification to press the lip

114. A cab will not direct warm air to the windshield even though the mode selector is set to defrost. Which test is the most useful?

- A. Replace the engine thermostat and the coolant hoses at once
- B. Command the door actuator with a scan tool
- C. Change the wheel bearings on the steer axle and grease them
- D. Tighten the exhaust clamps at the turbocharger outlet joint

115. At minus 35 degrees Celsius a fleet notices that several trucks crank slowly even with fully charged batteries. What is the main reason?

- A. Cold raises the battery voltage so the starter spins too fast
- B. Cold makes the cables thicker and so lowers the resistance
- C. Cold removes the need for a charge from the alternator
- D. Cold cuts battery capacity while thick oil adds load

116. A tractor with a charge air cooler has low boost, black smoke at full load, and a hissing noise under the cab. What is the best test?

- A. Replace the injectors because black smoke always means bad nozzles
- B. Pressure test the charge air system, checking the cooler, hoses, and clamps
- C. Change the engine oil because boost depends on viscosity
- D. Tighten the oil pan bolts because the hissing is an oil leak

117. On a tractor-trailer, the trailer supply valve button pops out repeatedly after being pushed in. Which cause should be investigated first?

- A. A cracked windshield washer reservoir under the cab floor panel
- B. A loose cab mounting bolt behind the driver seat in the cab
- C. A major leak in the supply line or a worn gladhand seal
- D. A stuck exhaust brake butterfly valve in the exhaust pipe

118. A driver reports heavy steering effort at low speed, and the power steering reservoir is low with no visible leak at the pump. What is the next step?

- A. Add transmission grease to the reservoir to restore pressure
- B. Replace the steering wheel because it is binding on the column
- C. Replace the steer tires because they have the wrong pattern
- D. Inspect hoses, fittings, and gear for leaks, then refill and bleed

119. A trailer landing gear is hard to crank and makes grinding sounds. What is the best action?

- A. Check the gearbox lubrication and legs, then lubricate and repair
- B. Hit the crank handle with a hammer to free it
- C. Add engine coolant to the gearbox for lubrication
- D. Weld the legs so they cannot move

120. A driver reports a slow air loss with brakes applied but not with brakes released. Which approach best finds the leak?

- A. Release the parking brake and listen for a hiss at the supply tank
- B. Replace all brake chambers on the axle at one time
- C. Fully apply the brakes and check fittings, chambers, and valves with soap solution
- D. Increase governor cut-out pressure to compensate for the loss

121. After replacing an A/C hose, what must be done before charging the system?

- A. Charge it right away and rely on the dryer to remove moisture
- B. Evacuate the system with a vacuum pump to remove air and moisture
- C. Fill it with compressed air to test and leave the air inside
- D. Add water to flush the lines before charging

122. The fluid in an automatic transmission is dark, smells burnt, and carries fine metal debris. What is the proper response?

- A. Change only the fluid and filter, then return the truck to service
- B. Add a friction additive to the fluid and continue the route
- C. Flush the cooler lines and ignore the debris in the pan
- D. Find the internal damage; a fluid change will not fix it

123. How is a four-terminal relay coil circuit usually tested?

- A. Energize the coil terminals and check continuity across the switch terminals

- B. Apply system voltage to the switch terminals only and check the coil
- C. Measure the resistance of the energized circuit with the battery connected
- D. Hit the relay on the bench until it clicks on its own

124. A fleet operating at minus 40 degrees Celsius has trouble cranking engines filled with 15W-40 oil. Which change best helps cold starting?

- A. Switch to straight SAE 50 oil for a thicker film at startup
- B. Use an approved low-temperature synthetic grade such as 0W-40
- C. Add a quart of diesel fuel to thin the oil before cranking
- D. Fill the crankcase halfway so the oil is easier to move

125. A tandem drive axle truck tracks to one side, and a torque rod bushing is found torn with the axle shifted forward. What is the correct repair?

- A. Shorten the other torque rod to pull the axle back by eye
- B. Remove the torque rod and rely on the springs to hold it
- C. Replace the worn bushings and set the axle alignment to the maker's specification
- D. Grease the torn bushing and keep driving until the next service

126. At minus 35 degrees Celsius a truck loses power and stalls, and the fuel filter is coated with white wax. What is the most likely cause, and what is the correct fix?

- A. Water in the tank, solved by adding a gallon of gasoline to the diesel
- B. Air in the lines, solved by opening the injectors during cranking
- C. A weak lift pump, solved by raising the idle speed permanently
- D. Fuel gelling, fixed by warming and a winter blend

127. A driver installs a high-draw auxiliary light bar on a remote work truck. What is the correct wiring practice?

- A. A relay, correctly sized wire, and a fuse near the source
- B. Use thin speaker wire and connect straight to the headlight wire
- C. Skip the fuse because the lights draw only a little current
- D. Connect the lights directly to the starter solenoid terminal

128. A 100 kWh battery pack is charged from 20 percent to 80 percent by a charger that delivers 50 kW. Ignoring losses, about how long does the charge take?

- A. 1.2 hours
- B. 0.6 hours
- C. 2.0 hours
- D. 3.0 hours

129. A tone ring on a drive axle has two missing teeth. What symptom is most likely?

- A. A constant high pitched squeal whenever the ignition key is on
- B. An intermittent wheel speed fault and ABS lamp at certain speeds
- C. A steadily rising compressor build-up time over several weeks
- D. A fuel gauge that reads full at all times on the dash

130. What is the correct way to check the fluid level on a heavy-duty automatic transmission with a dipstick?

- A. Shut the engine off, leave it in drive, and read it on a slope
- B. Check it with the engine at full throttle and in reverse
- C. On level ground, in neutral with the engine idling, at the specified fluid temperature
- D. Check the fluid only when the transmission is cold and the engine is off

131. An air spring on a trailer axle loses pressure overnight, and the truck sits low in the morning. What is the proper repair?

- A. Leave the air spring and raise the axle with a larger leaf spring
- B. Apply tape around the bag to hold the pressure
- C. Increase the system pressure to maintain ride height
- D. Find the leak with soap, replace the bag or fitting, check height

132. On a gravel highway, the air filter restriction indicator reads red after only 800 km. What should the technician do?

- A. Tap the old element to shake out the dust and reinstall it
- B. Replace the element, check the housing seals, and look for dust bypass
- C. Blow compressed air from the dirty side through the element
- D. Remove the element and run the engine without it until the trip ends

133. A technician fills a small spray bottle with solvent from a labelled bulk drum. What must be on the new container under WHMIS?

- A. No label, because the bottle will be emptied within the same shift
- B. A copy of the supplier's shipping invoice taped to the bottle
- C. A workplace label with the product name and handling information
- D. Only the technician's initials and the date the bottle was filled

134. A technician needs to check hydraulic system pressure at the pump. Which method is correct?

- A. Fit a gauge in the test port, compare to relief
- B. Feel the hose temperature with a bare hand after running
- C. Listen to the pump noise with the engine switched off
- D. Measure the voltage on the battery terminals with a meter

135. A truck's batteries are boiling, and the charging voltage measures 15.8 volts at idle. What is the likely fault?

- A. A weak starter relay that holds the batteries at a low charge
- B. A cold thermostat that keeps the engine under load
- C. A clogged cabin air filter that restricts airflow
- D. A faulty voltage regulator or sensing circuit that allows excessive alternator output

Practice Exam 13: Answer Key and Explanations

1. **A** — Windshield urethane bonds the glass to the body and takes time to reach the strength needed for crash and airbag loads, so the adhesive maker's safe drive-away time must pass before the vehicle moves. Cure is not instant, and wiper installation or a hot heater do not complete it. Follow the adhesive label for the exact time.
2. **B** — A glazed belt slips, so the alternator turns slower than it should and cannot produce enough output at the load, leaving the system near battery voltage. Checking the belt and tensioner is the first step, followed by voltage drop and output tests. The oil filter, clutch linkage, and hubs have no effect on charging.
3. **D** — A fifth wheel holds the trailer by its jaws closing around the kingpin, so wear or excessive gap in the jaws or a lock that fails to engage can allow the trailer to separate. Fresh grease, light paint wear, and the normal tilt of the plate on its pivots are expected conditions.
4. **A** — Opening the fuel system lets air in, and compressible air prevents the pump from building pressure, so the system needs priming and the suction side connections and seals should be checked. A clean filter does not stop starting, the ECM does not erase over a filter change, and the exhaust brake does not affect fuel supply.
5. **B** — A chamber that is loose on its bracket can shift under braking, and damaged threads cannot hold the correct clamp load. The studs are replaced, the nuts are torqued to the maker's value, and the stroke is rechecked. Washers, welding, or monitoring leave an unsafe mount on a component that must stay rigid under full brake force.
6. **C** — Range shifts are made by an air cylinder that is controlled by a range valve, so a failure to change range while other functions work points to the air supply, the valve, or the line to the cylinder. The oil sender, coolant hoses, and brake lining play no part in range shifting.
7. **D** — The trailer ABS module needs power and a good ground from the connector, so when the lamp stays on, the technician checks those circuits and the wiring between the connector and the module, and then reads fault codes. Washer fluid, blower speed, and steer tread depth have no connection to the trailer ABS lamp.

8. C — Wheel bearings need a controlled small end play, and the maker's procedure sets the nut torque and lock method and the end play is verified with a dial indicator on the hub. Guessing by feel or tightening until the wheel binds can overheat or loosen the bearings and cause wheel end failure.

9. B — The number stamped on a drum is the maximum diameter, because beyond it the thinner wall cannot absorb heat or resist cracking. A drum past that limit must be replaced and cannot be machined further or compensated with thicker lining. Delaying risks brake fade and drum failure. Always measure with a micrometer or drum gauge.

10. A — Burning propane and a running diesel both release carbon monoxide, which is odourless and builds quickly in a closed building. Ventilation and a working detector are the first controls. Grounding, tire gas, and tank condensation are minor concerns here and do nothing to protect the people inside the shop from poisoning.

11. D — The transmission must carry a lubricant approved for the cold, and the level is set at the bottom of the fill hole, which gives correct lubrication without churning losses. Overfilling raises temperature and leakage, and hydraulic or random engine oil may lack the additives needed for gears and can cause shift problems.

12. A — A thermistor sensor drops its signal as it warms, so a hot engine should read low voltage. A signal near the 5-volt reference means the circuit is open, such as a broken wire or failed sensor. A short to ground would pull the reading toward zero, and an alternator does not affect the reference.

13. B — Voltage drop equals current times resistance, so 400 amperes multiplied by 0.0006 ohm gives 0.24 volt. This is within the common allowance of about half a volt for a ground path while cranking. A reading far above that would indicate a corroded connection or damaged cable that needs to be found with the meter.

14. C — Power equals voltage multiplied by current, so current is power divided by voltage, which is 1,500 watts divided by 120 volts, giving 12.5 amperes. The extension cord and the circuit must be rated for this load, so a thin cord or a shared circuit risks overheating when several heaters run on the same line.

15. D — An evaporator ices over when too little warm air passes across it or when the cycling control fails to turn the compressor off, so the filter, the blower flow, and the control are checked first. The axle ratio, the engine brake lash, and the gladhand seals do not affect the evaporator temperature.

16. D — Wet liner standout above the block deck gives the head gasket the clamping load it needs to seal combustion and coolant. Too little or too much leaves the seal unprotected or crushes it. Standout does not set rod bearing clearance, bore roundness, or the piston clearance, which are separate measurements.

17. C — Contaminated fluid wears pumps, valves, and cylinders, so the cause is found, the system flushed, and new filters and fluid installed. Topping up or changing only the pump leaves particles in the circuit that destroy the new part. Removing the filter makes the contamination much worse. Matching the new fluid to the specification is part of the repair.

18. A — Toe is the difference between the tire distances measured across the front and across the rear at the same height, and an incorrect setting makes the tires scrub. Tire pressure, fifth wheel angle, and hub nut torque are different checks that do not describe toe. Toe is usually only a few millimetres, so measure carefully.

19. B — Regenerative braking takes most of the load, so friction brakes are used less and can corrode or seize from lack of use. Inspecting, cleaning, and servicing them keeps them ready for hard stops. Rusted rotors do not mean the regeneration has failed, and friction brakes still need regular inspection. Cleaning and testing the brakes before trips avoids surprises.

20. A — A vibration that follows road speed instead of engine speed comes from rotating parts after the transmission, such as an out of balance driveshaft, worn U-joints, or a loose carrier bearing. Checking and balancing them is the usual step. The compressor line, overflow bottle, and mirrors do not rotate with the wheels.

21. C — Repeated service brake use on long grades heats drums and linings, which lowers friction and expands the drum so the pushrod must travel further, resulting in fade. The remedy is proper gear selection and engine braking. Washer fluid, tire pressure, and a fan clutch do not cause this condition. Brake fade is why proper downshifting matters.

22. B — Hydraulic oil heats when flow passes over a relief valve instead of doing work, or when the cooler cannot shed the heat, so a valve set low, a stuck-open relief, or a dirty cooler are common reasons. Checking them is the right step. Washer fluid, tire pressure, and the dryer cartridge do not add heat to hydraulic oil.

23. D — A 12.1 volt reading shows the battery is only partly charged, and a load test on a low charge can wrongly fail a good battery. The right order is to recharge it and then test. Testing right away gives an unreliable result, adding water does not raise state of charge, and replacing it without testing may be wasteful.

24. A — Sliding tandems are held in position by locking pins, and a pin not fully engaged can let the axles slide when braking, which is dangerous. The technician confirms both sides are engaged before moving. Maximum tire pressure, a half-lowered landing gear, and the marker lights do not secure the tandems.

25. D — Pumping grease until fresh grease shows at all four bearing cap seals confirms the cross is full and purges old grease or water from each cup. Stopping after one stroke may leave a dry cup, and a stiff handle can mean a blocked fitting. A stopped shaft does not show the joint's condition.

26. B — Genuine DEF is 32.5 percent urea, and a refractometer reads that concentration directly, so a reading outside range proves dilution or contamination. The tank and lines are then drained, flushed, and refilled with proper DEF. A coolant hydrometer is the wrong tool, and adding crystals or disabling the heater only worsens the system.

27. C — An AGM battery is sealed, and a charger that exceeds the recommended voltage drives gas out through the valves and dries the mat, permanently damaging it. A charger or profile made for AGM

batteries limits voltage safely. AGM batteries accept charge, and a charge does not freeze them or reverse the plates.

28. B — A leveling valve sets ride height by sending air to the bag, so if the bag is full yet the unit sits low, the linkage or the height setting may be wrong, or the shock or mount is damaged. The wipers, brake spring, and heater core have no effect on the suspension height.

29. D — A camshaft should turn smoothly but not move up and down, so noticeable play means that the bushings are worn. This affects brake geometry and stroke, and the bushings need replacement. A properly fitted shaft does not float, and chamber spring weakness or drum expansion would not show as movement at the bracket.

30. A — A soot streak at a port shows exhaust escaping, and the metal expands as it warms so the leak seals and the tick fades. A collapsed lifter or loose flywheel bolt would not leave soot at the manifold, and an idler bearing makes noise that follows belt speed, not a cold-start exhaust pattern.

31. C — A click-type wrench relies on a calibrated spring, and leaving the spring compressed at a high setting can weaken it and shift calibration. Storing it at its lowest scale value, not zero, relieves the load while protecting the mechanism. Keeping the last setting or maximum setting leaves the spring loaded.

32. B — An intermittent fault appears only when a wire or terminal moves, so flexing the harness and connectors while a meter or scan tool watches the circuit reveals the exact spot where the signal changes. Replacing the module or clearing codes does not locate a loose terminal, and one static battery reading cannot catch a fault that only occurs with movement.

33. C — A fault code identifies a circuit or system, not a failed turbo, so the technician inspects the wiring and connector, tests the actuator, and checks that the vanes move freely before replacing anything. Replacing the turbo or reprogramming the controller first can leave the cause untouched and waste cost. Wiring and connector checks are quick and cheap.

34. A — Frame rails are heat-treated, and uncontrolled welding or drilling can weaken them or spread the crack, so the maker's instructions on method, reinforcement, and location must be followed. Welding with any rod, drilling extra holes, or painting the crack does not restore strength and may create a failure. Follow the maker's repair data before cutting any metal.

35. D — Free play lets the release bearing rest away from the pressure plate fingers, and with none the bearing keeps pressure on them, which reduces clamp load and the clutch slips. A worn disc or poor adjustment is the usual cause. Lube level, axle ratio, and a thermostat do not change clutch clamping force.

36. B — When air pressure reaches cut-out, the governor signals the unloader to stop pumping, and a failure of either lets pressure rise until the safety valve opens. A leaking gasket would lower pressure, and a worn adjuster or weak warning switch does not control the compressor. The governor and unloader are the first items to test.

37. D — Refrigerant must be recovered with approved equipment by a person who holds the required certification, because venting it harms the atmosphere and is regulated. Heating a line or draining the

liquid is unsafe and illegal. Recovered refrigerant is recycled or properly disposed of. Certification training covers recovery equipment, refrigerant handling, and legal requirements.

38. C — A cap holds the system pressure that raises the coolant boiling point, and a lower rating lets coolant boil at a lower temperature, so it flashes to steam and escapes under heavy load. The cap does not change circulation speed or thermostat timing, and a weaker cap does not seal tighter.

39. A — If other modules respond, the data link is working, so the engine module itself may lack power, ground, or ignition feed or have a damaged connector. Checking those circuits is quick and logical. Tire pressure, differential oil, and wiper circuits do not affect module communication. Checking those circuits takes only a meter and the wiring diagram.

40. C — A rod seal depends on a smooth, hard surface, and pits or scores cut the lip of any new seal so that it leaks again. The rod must be replaced or re-chromed and polished to specification. A thicker seal cannot fill the pits, coarse sandpaper adds scratches, and sealant additives do not repair the surface or belong in hydraulic oil.

41. D — Worn tie rod ends allow toe to change with road forces and the truck wanders, so they must be replaced, and the alignment checked since the toe setting will have shifted. Tightening the wheel nut, thickening axle oil, or raising tire pressure does not remove play in the steering linkage.

42. B — Grease soaks into lining material and cannot be cleaned out, so the linings must be replaced, and the leaking seal must be repaired so it does not happen again. Both ends of the axle are serviced together to keep braking balanced. Solvent, one-side replacement, or burning grease off leaves unreliable friction.

43. A — A grab handle provides three-point contact for entering and leaving the cab, and a handle that moves with a cracked weld can fail under body weight and cause a fall. It must be repaired or replaced and tested before use. Tightening bolts leaves the crack, climbing with the steering wheel is unsafe, and body filler hides the defect without strength.

44. B — High transmission temperature with a cool cooler outlet suggests that not enough hot fluid is reaching the cooler, which means that a line or the cooler itself is restricted. Checking flow and cleaning or replacing the parts follows. A clutch brake, battery clamp, or trailer tire pressure cannot cause that pattern.

45. C — A parasitic draw is current flowing with everything off, so measuring it with an ammeter in series and removing fuses one by one shows which circuit holds the load when the current falls. A voltmeter does not read current, the alternator does not draw when the engine is off, and the ground strap test does not isolate circuits.

46. D — Brakes that drag heat up the drums, and in freezing weather moisture can freeze in valves or seize the cam and adjusters, so those parts and the spring brake release should be inspected. The license plate bracket, mud flaps, and fuel cap are not part of the brake system. Free the binding before the drums overheat further.

47. A — Stroke is the movement of the pushrod from the released position to a full application, so the technician marks the rod with brakes released and measures again with a full application at normal system pressure. Chocks keep the vehicle still. Measuring a loose rod or the lining gap does not give the stroke that the limits use.

48. A — A repair order records the complaint, the cause, and the correction so that the next technician and the fleet know exactly what was done. A temporary fitting must be noted so that it is replaced properly later. Listing only parts or hours, or a vague note, hides the information needed for follow-up and safety.

49. C — A dashboard reading can come from a faulty sender, so the first step is to verify the pressure with a mechanical gauge at the oil gallery. If it is truly low, further tests such as oil level, dilution, and bearing clearance follow. Replacing parts or altering the relief valve before confirming wastes time and may damage the engine.

50. D — Frame alignment is checked by measuring diagonals between reference points such as holes or brackets on both rails, and the difference must fall within the maker's tolerance. Tire pressure, axle oil temperature, and lining thickness show other conditions and do not indicate a bent or swayed frame. Diagonals that differ beyond tolerance show twist or sway.

51. B — A hook latch keeps the load from slipping off the hook when the sling goes slack, so a hook without one is defective. Defective rigging is removed from service and tagged, not field-modified. Wire, welding, or a reduced load do not restore the rated safety, and standing clear alone leaves the hazard.

52. D — A weep hole lets leakage from a failing seal escape so it does not contaminate the bearing, so coolant there means the seal has failed. Continued running risks bearing failure and overheating. The cap, thermostat, and coolant level do not cause leakage at the weep hole in that way. Replace the pump and refill the coolant.

53. C — The heater needs full coolant flow through the core, and low coolant lets air collect so that flow is poor at idle. Refilling and bleeding the system restores heat, and the technician also looks for the leak. A radio fuse, a weak battery, and an exhaust pipe crack do not affect the coolant in the heater core.

54. B — A noise on drive that fades on the coast indicates that the driving side of the ring and pinion teeth or the pinion bearings are involved, so contact pattern, backlash, and pinion bearing preload are the places to check. Steer axle torque, a landing gear crank, and a dryer valve do not make axle gear noise.

55. A — Battery corrosion is acidic salt, so a baking soda solution neutralizes it, and eye protection and gloves are required. After rinsing and drying, the clamps are tightened and a protectant applied. Adding acid worsens the problem, bare-hand scraping is unsafe, and hammering can crack the battery post. Rinse thoroughly afterward and dry the terminals before reconnecting.

56. D — Milky oil means water has mixed in, usually from a leaking seal or breather or from pressure washing, and it reduces lubrication and corrodes bearings. The source is found, the hub cleaned, and fresh oil added. Fresh oil is clear, and cold or overfilling does not create a milky appearance.

57. C — At a stop the input shaft still spins, and the clutch brake stops it when the pedal is pushed to the floor so first or reverse can engage without grinding. When the brake is worn the shaft keeps spinning and grinds, while shifts on the move do not need it. The filter, steering seal, and plug are unrelated.

58. B — A restricted compressor intake creates a vacuum in the cylinder that pulls crankcase oil past the rings, which then floods the dryer and tanks. Inspecting the intake and filter, along with the discharge line for carbon, finds the source. Parking valves, chamber diaphragms, and valve caps do not add oil to the air supply.

59. B — Low temperatures slow the chemical reactions in a traction battery, which reduces available energy and charging acceptance, and the thermal system uses power to heat the pack. Preconditioning the battery before charging helps. Cold does not increase capacity or lengthen cables, and an electric motor does not need hot coolant for torque.

60. A — When lights dim together while one load is applied, the current is returning through a poor ground path, which causes voltage drop shared among circuits. Checking the ground wire and the trailer plug finds it. Fluid level, tire pressure, and a windshield crack do not affect trailer lights. A voltage drop test on the ground wire confirms it.

61. A — Long idling at low load keeps exhaust temperatures below the point needed to burn off soot, so loading builds. A parked regeneration under the maker's procedure clears it, and the technician should also correct the operating pattern. Removing the filter is illegal, and spraying water on a hot ceramic filter can crack it.

62. D — A sagging door misaligns the latch and striker, so after confirming the hinge pins and bushings are sound the technician adjusts the hinge position and the striker so the door closes smoothly. Slamming, prying the skin, or grinding the latch damage the door and weaken the lock, and they do not fix the alignment problem.

63. C — The trailer's apron slides on the fifth wheel plate, so a lubricated plate lets the tractor and trailer pivot with little friction and wear. The plate is cleaned and greased with the recommended product, and the mounting is checked. A dry plate causes bind, and tightening the jaw will not relieve it.

64. B — Gear oil thickens in the cold and the synchronizers move through it slowly, so the shifts feel stiff until it warms. An approved synthetic lubricant with a lower cold viscosity helps. A frozen clutch brake would not improve with distance, and the axle ratio and steering fluid are unrelated to shift effort.

65. D — A voltage that swings with engine speed points to a charging circuit that makes poor contact when vibration or alternator output changes, such as a loose or corroded output terminal or ground. A voltage drop test along the circuit finds it. Piston rings, a coolant bottle, and spring bushings cannot change the electrical voltage that way.

66. C — At very low temperatures a fluid must still flow, so a multigrade hydraulic oil with a high viscosity index and a pour point well below the operating temperature is used, as the maker specifies. Heavy gear oil can turn solid, engine oil may lack the right additives, and diesel and water do not make a safe hydraulic fluid.

67. A — A binding hinge in the cold is usually dirty or dry, so cleaning and lubricating it and then checking door alignment and latch operation fixes the issue without damage. Prying the door can bend it, removing hinge pins leaves the door unsafe, and paint does nothing to free a binding hinge.

68. D — Water in hydraulic oil causes corrosion, poor lubrication, and foam, so the fluid and filter must be replaced and the source, such as a bad breather, cap, or cooler leak, found and fixed. Topping up only dilutes the problem, antifreeze does not belong in a hydraulic system, and continuing with water in the oil damages pumps and valves.

69. B — A clutch engages when its coil receives power through the fuse, relay, and pressure switches, so with a correct charge and a free pulley the technician checks that power reaches the coil and that the low-pressure switch is not holding it open. The cab filter, wheel bearings, and exhaust back pressure have no influence on the clutch coil.

70. A — A common rail holds very high pressure that can inject fuel through skin or cause a fire, so the engine is shut off and the specified time waited so pressure drops, then the procedure is followed. Running the engine keeps pressure high, a rag does not stop a jet, and heat near fuel is dangerous.

71. C — Once the braid is visible, the hose has lost its protective cover and may fail under pressure, so it must be replaced with a hose of the correct rating and length that does not chafe. Tape, sealant, or repositioning hides the problem without restoring strength. A hose is a safety item under pressure, so replace it.

72. A — A plugged breather lets heat expand the air in the housing so pressure builds and forces lubricant past the seals at several points. Clearing or replacing the breather and then repairing seals as needed is the right sequence. The tank drain, fifth wheel bolts, and wiper motor do not influence axle housing pressure.

73. B — Grinding after the engine runs means the starter is still being energized or the pinion has not retracted, so a sticking solenoid or a fault in the start circuit is the cause. Charging speed, turbo surge, and intake restriction cannot energize the starter. Inspecting the solenoid contacts and the switch wiring confirms which part is at fault.

74. D — Welding current seeks the shortest path to the ground clamp, and stray current or voltage spikes can destroy control modules. Disconnecting the batteries and placing the clamp near the weld keeps the current out of the vehicle electronics. Keeping the key on, grounding at the steering column, or lowering the amperage does not remove the risk.

75. C — Bubbles in the sight glass with low suction pressure show that the system lacks liquid refrigerant, so it is low on charge from a leak. The technician finds and repairs the leak, evacuates, and recharges to specification. Too much oil or a slow fan would not produce that combination and the set point does not cause bubbles.

76. A — A star pattern in stages seats the wheel evenly on the hub pilot and avoids distortion, and the final torque is set with a torque wrench to the maker's value. The nuts are rechecked after a short

distance since they can settle. One pass in a circle, overtightening, or leaving some loose does not clamp the wheel evenly.

77. C — Foamy fluid and pump whine show that air is mixing with the oil, usually because a suction hose clamp is loose or the fluid level is low so the pump draws air. Fixing the leak and bleeding the system solves it. Tire pressure, a fifth wheel plate, and a dryer cartridge are not part of the steering circuit.

78. D — A thermostat stuck open lets coolant flow through the radiator at all times, so the engine cannot reach operating temperature, and the heater gets cool coolant. A blocked radiator or slipping impeller would make the engine run hot. A fan clutch locked on adds some cooling but rarely holds a highway engine this cold.

79. B — A desiccant cartridge that is saturated cannot pull water from the compressed air, so moisture reaches the tanks, and a weak purge shows the dryer is not regenerating. Replacing the cartridge and checking the purge valve and heater restores drying. Alcohol, an open purge, or a larger compressor do not remove the water.

80. C — Current must flow through the meter, so it is placed in series in the circuit with the leads in the current jacks and a range at or above the expected current. Connecting the current setting across a load shorts the circuit and can blow the meter fuse. Resistance or voltage settings do not measure current.

81. D — Many sensors share a regulated five volt reference supplied by the engine module, so a short to ground on that line drops the voltage to every sensor on it at once. Unplugging sensors one at a time shows which one pulls the reference down. Tires, washer lines, and cab steps cannot affect the sensors.

82. A — A pedal that is slow to return is usually held by binding in the linkage pivots or by an air assist cylinder that is dry or sticking, so the technician inspects and lubricates those points and repairs worn parts. The fifth wheel bolts, axle breather, and coolant bottle have no connection to the clutch pedal return.

83. B — Build-up time depends on compressor output, and slow pumping with no leakage points to a worn compressor, a carbon restriction in the discharge line, or a bad unloader. Checking them is the logical next step. The wiper, spring hanger, and turn signal switch have no effect on air supply. A compressor test confirms the cause.

84. C — Copper and lead are the soft overlay and lining metals in main and rod bearing shells, so rising levels point to bearing wear. Iron suggests liners or rings, and silicon points to dirt entering through the intake. Normal iron and silicon in this report rule out liner wear and dust ingestion as the main source.

85. B — A tire that has sat overnight reads cold pressure, which is the value the specified inflation refers to, so the tire is filled to the specified pressure. Pressure drops as the temperature falls, so low readings in winter are common. Adding an extra margin or releasing air gives the wrong inflation, and all tires need checking.

86. A — Frozen ground can soften or shift under load, so a stand needs a wide, solid base such as steel plate or timber over firm ground to spread the weight. Ice or stacked chocks can slide or crush. A jack only lifts and must not be the lone support under a vehicle.

87. D — A retarder works when fluid fills the housing, so even with a normal level the control valve and the signal that commands the fill must work correctly. Testing these is the next step. Gladhand seals, wiper blades, and seat height are not connected to the retarder. Valve and signal tests identify the fault without removing parts.

88. D — A vehicle pulls toward the side with more braking effort, so a pull to the right means the right brakes work harder or the left brakes are weak, from causes such as contaminated linings, a stuck chamber, or a seized adjuster. Compressor speed and parking valve position do not create a one-sided pull.

89. A — Combustion gas that leaks past worn rings pressurizes the crankcase and pushes oil mist out the breather, and it increases at full load. A restricted filter or exhaust leak affects boost and exhaust but not crankcase pressure. A weak thermostat changes temperature only, so worn rings are the cause. Measuring blow-by confirms it.

90. B — When the linkage is tight, free play at the wheel can come from lash inside the steering gear, which is adjusted at the sector shaft by the maker's procedure. Adding washers, over-tightening the drag link, or loosening the pitman arm nut does not remove internal lash and can be unsafe.

91. C — An inactive code means the fault was seen earlier but is not present now, and a count of one points to a single event such as a loose connector or momentary short. The technician inspects the harness and connector for an intermittent. Replacing the sensor at once or ignoring the code skips the proper diagnosis.

92. C — Speed equals flow divided by piston area. The flow is 48 litres per minute, or 0.0008 cubic metre per second, and a 100 mm bore has an area of about 0.00785 square metre. Dividing gives about 0.102 metre per second, which is 10.2 centimetres per second, so the other speeds would need a different flow or bore.

93. B — Ice bonds the seal to the frame, and gentle heat or a de-icing product melts it without tearing the rubber. A silicone treatment afterward keeps moisture from freezing it again. Pulling with a chain, boiling water on glass, or hammering can rip the seal, crack the glass, or damage the door.

94. A — Coolant in oil after a passing gasket test points to another path between the two circuits, and the oil cooler is a common one because oil and coolant share the core. Pressure testing the cooler confirms whether it leaks. The cap, thermostat, and fuel system do not connect to the oil circuit in that way.

95. D — A crimp splice with adhesive-lined heat shrink seals out moisture and holds the conductor securely, which prevents corrosion in harsh weather. Twisting and taping lets water in and the splice can fail. Foil or leaving the wires open exposes them to corrosion and possible shorts. Sealed splices last through winter and wet conditions.

96. C — Hot coolant should flow through the core and warm both hoses, so a large temperature difference means the core is restricted and little coolant passes through. Flushing or replacing the core is the repair. A thermostat stuck open or a fast blower would not create a hot inlet and a cool outlet.

97. D — High voltage cables can deliver a lethal shock, so the technician follows the maker's procedure: remove the service disconnect, wait for capacitors to discharge, and prove the circuit is dead with a rated meter while wearing insulating gloves. Cutting cables, trusting the key, or using leather gloves and a lamp is unsafe.

98. B — The supply line is red and the service line is blue, and the couplings must match with intact seals so that the trailer brakes release and apply correctly. The technician confirms each is locked and holds pressure. Crossing the lines, using shop air only, or leaving a coupling off creates a loss of braking control.

99. A — A compression-release brake works by opening the exhaust valves near top dead centre, and the slave piston lash decides when and how far that happens, so incorrect lash gives weak braking. The lash must be set to the maker's specification. Transmission fluid, clutch free play, and tire pressure do not affect the engine brake.

100. C — Feathering is a saw-tooth wear pattern created when a tire is dragged sideways, which is typically caused by excess toe-in or toe-out. Setting toe to specification and checking linkage wear stops it. Hub oil level, compressor condition, and seat mounts do not cause feathered tread wear. Correcting toe and checking worn parts stops the wear pattern.

101. A — A code points to a circuit, and a transmission that shifts normally suggests an electrical issue such as a damaged connector or wire. Testing the circuit with a meter is the quick and inexpensive first step. Replacing the valve body, clearing the code, or removing the transmission skips the diagnosis.

102. B — LED lamps need a solid ground and clean connections, and a poor ground or a high resistance joint from the repair makes them dim or go out. The technician checks the repaired splices and grounds with a voltage drop test. Tire pressure, a landing gear coupler, and fifth wheel grease are not part of the lighting circuit.

103. D — Mentoring means correcting unsafe habits at the moment they appear and explaining why. A starter circuit carries hundreds of amperes, and a dropped wrench across a live terminal can cause severe burns. Letting the shortcut stand, silently taking over, or dismissing the voltage teaches the apprentice that skipping isolation is acceptable.

104. D — A fault only at speed suggests a signal that becomes unreliable when the wheel turns quickly, such as a poor sensor gap, loose clip, damaged tone ring, or a connector issue. Inspecting these parts is cheap and logical. Replacing the controller first is expensive, supply pressure does not change the signal, and removing the sensor leaves the wheel without ABS.

105. C — A fuse protects the wire from overheating, so a larger fuse lets the wire carry current beyond its rating and may start a fire. Repeated blowing signals a short or overload that must be traced and

repaired. Bridging the fuse or using a larger breaker removes the safety function. Fuse sizes protect wire insulation, not the load.

106. B — A JIC fitting seals by metal-to-metal contact at the flare, so it must be tightened to the specified flats or torque, and the hose must lie without twist so it does not weaken under pressure. Thread tape does not belong on a flare, and over-tightening damages the seat and nut.

107. A — Oil contamination on a clutch disc causes slip and chatter, and it comes from leaks at the rear main seal or the input shaft seal that lie next to the clutch housing. Replacing the disc without fixing the source leads to a repeat failure. A front hub, a filler cap, or a fuel line cannot reach the clutch.

108. A — Nitrite inhibits cavitation corrosion on wet liners, and conventional coolant loses it with use, so low readings call for the maker's supplemental additive. Extra antifreeze does not restore inhibitors and can reduce heat transfer. Plain water adds no protection, and cavitation damage occurs in any climate. Retest the coolant after treating to confirm the level.

109. C — Cab mounts isolate the cab from frame vibration, and when the rubber is torn the cab transmits shake and may move out of position. Replacing the isolators and torquing the hardware restores isolation. Clamps, sealant, or solid mounting would increase vibration and stress the cab structure. Torque the bolts only after the cab is supported at normal height.

110. D — A slow crank points to a weak battery or poor connections, and cold starting also depends on the glow plugs or the intake heater working properly, so those are checked first. Trailer tires and landing gear, the tractor's air dryer, and door seals have no effect on the unit's engine starting.

111. B — Parallel connection joins all the positives together and all the negatives together, so the voltage stays at twelve volts while the capacities add. Series connection would raise voltage instead. Four parallel batteries therefore give more cranking current and reserve capacity at the same voltage, which is why many trucks use them.

112. A — Cracks near a mounting weld mean the bracket or frame is failing under the trailer load, which risks losing the trailer. The unit is taken out of service and the mounting repaired or replaced as the maker requires. Adding a weld pass, painting, or reducing the load does not make it safe.

113. C — A lip seal needs a smooth, round surface, and a groove worn into the yoke lets oil escape under the lip, so a new seal alone leaks again. A repair sleeve or new yoke restores the surface, and the seal is installed squarely. Sealant, thicker oil, or over-tightening the nut do not remove the groove.

114. B — A mode door or its actuator that fails to move keeps air from reaching the windshield, so commanding the actuator with a scan tool and watching or feeling the door movement shows whether the actuator, wiring, or door is at fault. A thermostat, wheel bearings, and exhaust clamps are unrelated to door position.

115. D — A cold battery produces fewer amperes because its chemical reactions slow down, and the engine needs more torque to turn since cold oil is thick. Together this makes cranking slow even from a full charge. Keeping batteries charged and warm, and using block heaters, helps. Cold does not raise voltage or lower cable resistance.

116. B — A leak in the charge air system lets boost escape, which reduces air for combustion and produces black smoke, and the leak often makes a hiss. Pressure testing the cooler, hoses, and clamps finds it. Injectors, oil viscosity, and the oil pan do not explain the low boost and hissing together.

117. C — The supply valve button pops out when system pressure falls below its set point, which means the trailer supply side cannot hold air. A large leak in the line, a worn gladhand seal, or a trailer fault is the first thing to find. The washer reservoir, cab bolt, and exhaust brake are not part of the air supply.

118. D — Low fluid with heavy steering means hydraulic assist is being lost, so every hose, fitting, and the steering gear must be inspected for leaks. Refilling with the specified fluid and bleeding air restores assist. Grease does not work in a hydraulic circuit, and a wheel or tires do not explain a low reservoir.

119. A — Grinding and hard cranking show a lack of lubrication or worn or bent gear parts in the landing gear, so the technician checks the gearbox, lubricates it, and repairs or replaces worn parts. Hammering the crank, using coolant, or welding the legs damages the assembly or defeats its function. Fixing the cause avoids damaged gears.

120. C — A leak that shows only with the brakes applied lies in the service circuit downstream of the application valve, so applying the brakes pressurizes those parts and a soap solution shows bubbles at the leaking point. Replacing chambers blindly is wasteful, and raising cut-out pressure hides the problem without fixing it.

121. B — Air and moisture inside an A/C system cause poor cooling and corrosion and can freeze at the expansion device, so the system is evacuated with a vacuum pump and held to confirm there is no leak before it is charged. The dryer cannot remove large amounts of moisture, and air or water must never be added.

122. D — Dark, burnt fluid with metal means clutch plates or gears are wearing, and the cause lies inside the unit. A fluid change alone hides the symptom and the damage continues. Additives and cooler flushing do not repair worn parts, so the transmission needs inspection and likely overhaul. The pan and the filter will show how much damage exists.

123. A — A relay uses a small current through the coil to close the switch contacts, so the bench test energizes the coil terminals and confirms continuity across the switch terminals. Power on the switch terminals alone does not test the coil, resistance is only valid on a de-energized circuit, and hitting the relay is not a test.

124. B — A lower W number means the oil flows better when cold, so a 0W-40 synthetic that meets the engine maker's specification reduces cranking drag and gives faster oil delivery to the bearings. Thicker oil resists flow, diluting oil with fuel damages lubrication, and underfilling the crankcase risks starving the pump.

125. C — Torque rods locate the axle fore and aft and hold its alignment, and a torn bushing lets the axle shift and the truck track off line and wear tires. Replacing the bushings and aligning the axle to the maker's specification restores tracking. Shortening a rod, removing it, or greasing the damage does not hold the axle in place.

126. D — Paraffin wax forms in diesel at very low temperatures and plugs the filter, so the engine starves. Warming the filters and fuel and using a winter blend or an approved anti-gel additive fixes it. Adding gasoline is dangerous and unreliable, and the white wax rules out air or a weak pump as the cause.

127. A — A high-draw load needs a wire that can carry its current without overheating, a relay so that a small switch circuit controls the load, and a fuse close to the source to protect the wire if it shorts. Thin wire or no fuse creates a fire hazard, and the starter terminal is not a safe accessory feed.

128. A — A change from 20 to 80 percent is 60 percent of 100 kilowatt-hours, or 60 kilowatt-hours of energy. Dividing that by the 50 kilowatt charger power gives 1.2 hours. In practice, losses and a charge rate that slows as the pack fills would extend the time, but the ideal calculation gives this figure.

129. B — A wheel speed sensor reads the teeth on the tone ring, and missing teeth produce gaps in the signal that the controller may read as a speed error, usually at certain speeds. This causes an intermittent fault and lamp. The squeal, build-up time, and fuel gauge are unrelated to the tone ring.

130. C — Automatic transmission fluid level changes with temperature and pump operation, so the maker's procedure calls for level ground, neutral with the engine idling, and the specified fluid temperature, using the proper dipstick marks. A slope, wide open throttle, or a cold engine-off check gives a false reading that can lead to overfilling or underfilling.

131. D — A slow air loss means a leak in a bag, fitting, or line, and soap solution shows where. The faulty part is replaced and the ride height set. Taping a bag or raising pressure does not stop a leak, and substituting leaf springs changes the design and is not a repair.

132. B — Dusty roads load an element quickly, and a red indicator means restriction is beyond the limit, so the element must be replaced and the housing seals and ducting checked for dust bypass. Tapping or blowing air through the dirty side damages the media. Running without a filter lets abrasives wear the engine quickly.

133. C — When a hazardous product is moved into a workplace container, WHMIS requires a workplace label showing the product name and safe handling information, with a reference to the safety data sheet. Skipping the label, using an invoice, or initials alone leaves coworkers without hazard information and does not satisfy the requirement.

134. A — A gauge in the test port shows the actual system pressure, and comparing it to the relief valve setting shows whether the pump and relief valve are working correctly. Hose temperature, pump noise, and battery voltage do not measure pressure and may mislead the technician, so a gauge reading is the correct method.

135. D — A charging voltage near 14 volts is normal, and 15.8 volts means the alternator is overcharging, which boils the electrolyte. The regulator or its sense circuit controls output, so it is the first suspect. A starter relay, thermostat, or cabin filter cannot raise the charging voltage. Testing the regulator and the sense wire confirms the diagnosis.