

PRACTICE EXAM 8: 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 starter circuit on a tractor carries 400 amps during cranking, and the battery cable and connections have a combined resistance of 0.0012 ohm. What is the voltage drop across the cable?

- A. 0.048 volts
- B. 0.33 volts
- C. 4.8 volts
- D. 0.48 volts

2. An oil analysis report on a regional haul tractor shows fuel dilution of 6 percent and a falling viscosity. Which condition is the most likely cause?

- A. A worn engine air filter letting abrasive dust reach the oil
- B. A leaking injector or a failed lift pump seal allowing fuel into the crankcase
- C. Overfilling the sump by about two litres at the last service
- D. Using a 15W-40 oil in a winter that never fell below minus five Celsius

3. A technician measures 90 mm of free play at the rim of a steering wheel with the engine running on a heavy truck. What is the most reasonable interpretation?

- A. Free play is excessive, so the steering linkage and joints need inspection
- B. The free play is normal because large steering wheels need extra slack

- C. The tires are underinflated, so the steering will tighten after inflation
- D. The brake chambers are out of adjustment and need to be set

4. A technician finds water in the wet tank of a trailer-pulling tractor every morning, and the air dryer does not seem to exhaust at governor cut-out. Which is the most likely cause?

- A. The air dryer purge valve or its governor signal has failed
- B. The service brake pedal valve is leaking air to the atmosphere
- C. The compressor unloader is stuck in the loaded position
- D. The wet tank drain valve is open slightly during the night

5. A technician sets a clutch pedal to have no free play so the release bearing stays lightly in contact with the pressure plate fingers. What problem should be expected?

- A. Smoother shifts because the disc is always partially released
- B. Early release bearing wear and clutch slip due to reduced clamp load
- C. Excessive pedal effort caused by the greater leverage in the linkage
- D. A clutch that will not engage fully when the pedal is raised

6. A refrigeration unit on a dry-van and reefer fleet's trailer could restart automatically on a thermostat call while a technician replaces an evaporator fan blade. Which step must come first?

- A. Post a warning sign at the control panel and keep the evaporator doors propped open
- B. Raise the setpoint above ambient so the thermostat will not call for cooling
- C. Wear snug gloves and work quickly between two thermostat cycles
- D. Switch the unit off, remove the key, and disconnect standby power and the starting battery

7. A reefer carrying fresh produce is set to continuous run, and the driver asks whether start-stop mode would be acceptable. Which reply fits best?

- A. Start-stop mode is required for produce to prevent freezing

- B. Neither mode affects the product, so the setting does not matter
- C. Continuous mode keeps air moving and temperatures even for fresh produce
- D. Start-stop mode is always better for produce since it saves fuel

8. A hydraulic cylinder has a bore of 80 millimetres and receives a flow of 30 litres per minute. What is the extension speed, to the nearest tenth of a centimetre per second?

- A. 99.5 cm/s
- B. 19.9 cm/s
- C. 9.9 cm/s
- D. 4.9 cm/s

9. A technician checks the parasitic draw on a tractor that discharges its batteries over a weekend. How should the ammeter be connected?

- A. In parallel across the battery posts with the key in the on position
- B. In series with the starter solenoid while the engine is cranking
- C. Between the alternator output stud and the ground with the engine idling
- D. In series with the negative battery cable after the modules have gone to sleep

10. A coach engine shows coolant loss with no external leak, and the exhaust has a faint sweet smell with white vapour after a cold start. Which test confirms the most probable fault?

- A. A combustion gas test on the coolant and a cooler pressure test
- B. A load test of the batteries with the headlights switched on
- C. A flow test of the fuel supply pump at the secondary filter
- D. A compression test on the cylinder with the highest injector balance rate

11. A technician connects gauges to a tractor's R-134a air conditioning system and finds low pressure on both the low and high sides, with bubbles in the sight glass. What is the most likely cause?

- A. A cabin air filter that is plugged at the air intake
- B. Low refrigerant charge, so leak test then recharge
- C. An overcharged system that needs refrigerant removed
- D. A blocked condenser that is causing high-side pressure to climb

12. A truck's power steering reservoir shows foamy fluid and a whining pump. Which cause is the most likely?

- A. Overheated engine coolant mixing with the steering fluid
- B. Air drawn into the pump suction line
- C. A weak alternator that is not supplying the pump motor
- D. A cracked wheel rim at the front axle position

13. With the engine off and the service brakes fully applied, a technician hears a steady hiss from the back of one rear brake chamber. What does this indicate?

- A. A leaking service chamber diaphragm on that wheel position
- B. A leaking park brake spring section in the same chamber
- C. A worn brake lining that allows air to bleed past the drum
- D. A normal release of air as the slack adjuster seats in the chamber

14. A coach has a squealing noise that begins when the driver presses the clutch pedal, and stops when the pedal is released. Which component is the most likely source?

- A. The engine crankshaft rear seal
- B. The pilot bearing in the flywheel
- C. The clutch release bearing
- D. The transmission input shaft splines

15. A technician finds that a sleeper cab does not lock down properly after tilting, and the warning lamp stays on. What is the correct response?

- A. Ignore the lamp since cab latches only matter during tilting
- B. Drive the vehicle slowly until the lamp turns off by itself
- C. Tape the lamp lens to prevent distraction for the driver
- D. Inspect and repair the cab latch, striker, and sensor

16. Two 12-volt batteries rated 900 cold cranking amps each are connected in series on a 24-volt starting system. What are the system voltage and available cranking amps?

- A. 12 volts and 1,800 cold cranking amps
- B. 12 volts and 900 cold cranking amps
- C. 24 volts and 1,800 cold cranking amps
- D. 24 volts and 900 cold cranking amps

17. A reefer tractor engine runs 7 degrees Celsius cooler than normal on a cold route, and the cab heater blows only lukewarm air. What should the technician check first?

- A. Whether the fan clutch is locked in the engaged position
- B. Whether the water pump impeller has separated from its shaft
- C. Whether the thermostat is stuck partly open
- D. Whether the radiator fins are plugged with road debris

18. Before working on the high-voltage system of a hybrid truck, a technician has disabled the service disconnect. What must be done before touching any orange cable?

- A. Assume it is safe, since the service disconnect cannot fail
- B. Wait the set time, then verify zero voltage with a rated meter
- C. Touch the cable quickly with a bare hand to test for voltage
- D. Spray the cable with water to drain any stored charge

19. A technician aligns a front axle and finds the front of the tires measures 1,810 mm between the centres of the tread and the rear measures 1,812 mm. What is the toe?

- A. 2 mm toe-in
- B. 1,811 mm toe-in
- C. 0 mm toe
- D. 2 mm toe-out

20. A technician measures an applied stroke of 57 mm on a Type 30 clamp-type brake chamber fitted with an automatic slack adjuster. What is the correct action?

- A. Replace the brake chamber only because stroke is a chamber problem
- B. Back off the adjuster nut one half turn and pass the brake as adjusted
- C. Treat it as out of adjustment and find why the automatic adjuster failed
- D. Leave it alone since 57 mm is within the allowance for loaded vehicles

21. A driver complains that a manual transmission grinds when upshifting from a stop, with the engine running and the clutch pedal pressed to the floor. Which component should be checked?

- A. The transmission cooler hoses at the radiator tank
- B. The clutch brake that slows the input shaft
- C. The rear axle breather located on the carrier housing
- D. The front wheel bearings and their lubricating oil

22. A tractor charges at 13.2 volts at 1,500 rpm with the lights and fans on, and an oscilloscope shows an AC ripple of 0.9 volts on the battery. What is the most likely fault?

- A. A failed diode in the alternator rectifier
- B. A weak battery cell caused by low electrolyte in one cell
- C. A loose engine cooling fan belt that is slipping at idle
- D. A worn starter drive gear that is leaking current to ground

23. A technician tests a coolant sample with a refractometer and reads protection to minus 22 degrees Celsius in a system expected to protect to minus 37. What is the correct correction?

- A. Leave it as is, since protection above minus 20 is acceptable in Canada
- B. Add distilled water until the reading rises to match the target
- C. Add a supplemental additive package, which restores low-temperature protection
- D. Drain some coolant and add concentrate to reach a 50 percent mix

24. A technician lifts a 1,200 kg trailer axle assembly with a two-leg chain sling. Each leg makes a 60-degree angle with the horizontal. What is the tension in each leg?

- A. 600 kg
- B. 693 kg
- C. 1,200 kg
- D. 346 kg

25. A reefer's evaporator coil is heavily iced, return air temperature is rising, and the unit runs constantly. Which fault is the most likely cause?

- A. A weak tractor battery at the tractor's starting circuit
- B. A bent trailer landing gear leg at the nose
- C. A low windshield washer fluid level in the tractor
- D. A failed defrost sensor or defrost heaters

26. A hydraulic pump on a tipper body makes a loud whining noise and the fluid in the reservoir looks milky. What is the most likely cause?

- A. A pressure gauge that is reading in the wrong units
- B. An overfilled reservoir that is above the full mark
- C. Air entering the suction side or water contamination causing aeration and cavitation
- D. A hose that is too short on the return line

27. A tractor pulls to the right under braking only, although it tracks straight when rolling. What is the most reasonable first check?

- A. Brake balance between the left and right sides
- B. The driver's seat suspension and the cab floor mounts
- C. The engine oil level and the dipstick condition
- D. The trailer landing gear crank and handle

28. A voltage drop test on the ground side of a starter circuit reads 0.8 volts while cranking, and the specification allows no more than 0.5 volts. Which action fits best?

- A. Replace the starter motor since a high reading is caused by the starter
- B. Increase the engine idle speed to compensate for the excessive drop
- C. Clean and tighten the ground cable connections and re-test the voltage drop
- D. Replace the battery since a low reading proves a weak battery

29. A coach with a failed air system must be towed, and its spring brakes are locked on. Which is the correct method to release them for towing?

- A. Heat the chambers with a torch until the power springs soften
- B. Cage each spring brake with its caging bolt, then tow the coach
- C. Cut the air lines to the chambers so the springs relax slowly
- D. Pry the pushrods away from the slack adjusters with a long bar

30. A tractor with a range-shift transmission will not leave low range, and the shift lever moves normally. What is the best first check?

- A. Gear oil in the rear axle at the carrier level
- B. The coolant concentration in the radiator reservoir
- C. The clutch pedal stroke at the cab floor
- D. The range cylinder's air supply and control wiring

31. A tractor shows an engine oil pressure of 70 kPa at hot idle and normal pressure at 1,800 rpm. Which finding would most directly support a worn bearing as the cause?

- A. Pressure stays low with a known-good gauge, correct level, and viscosity
- B. Pressure drops only when the cooling fan engages at higher temperature
- C. Pressure fluctuates when the engine is switched from idle to an engine brake
- D. Pressure rises when the oil level is raised to the top of the dipstick

32. A technician opens an air conditioning system to replace a compressor on a coach. Which component should be replaced at the same time?

- A. The radiator cap, since it holds the refrigerant pressure
- B. The receiver-drier, since it absorbs moisture
- C. The cabin air filter, since it protects the refrigerant
- D. The engine thermostat, since it controls the refrigerant flow

33. A technician bench-tests a four-terminal relay and finds continuity between terminals 30 and 87 with no power applied to the coil terminals. What does this show?

- A. The relay contacts are stuck closed and the relay must be replaced
- B. The relay is normal since terminals 30 and 87 always connect at rest
- C. The relay coil is open and needs rewinding at the coil terminals
- D. The relay is fine if the coil resistance is about 85 ohms

34. A technician checks a steer tire that shows feathered tread wear across the rib, with edges that feel sharp one way. Which alignment fault is the most probable cause?

- A. Low engine oil pressure
- B. A worn air dryer cartridge
- C. Incorrect toe setting
- D. Excessive caster angle

35. A cylinder leakage test shows 30 percent leakage, with air heard hissing at the tailpipe. Which component is most likely leaking?

- A. The piston rings in the cylinder being tested
- B. The intake valve in a neighbouring cylinder
- C. The head gasket between two adjacent cylinders
- D. An exhaust valve not seating in that cylinder

36. An ABS lamp turns on after a coach crosses a rough gravel road, and the scan tool shows an erratic signal from one front wheel speed sensor. What should the technician check first?

- A. The brake chamber stroke at all wheel positions on the coach
- B. The compressor discharge line for carbon build-up near the head
- C. The sensor air gap, tone ring, retaining clip, and wiring
- D. The battery electrolyte level in all cells of the starting battery

37. A technician checks the fluid on an automatic transmission after a recent service. Which procedure matches standard practice for a fluid check?

- A. Warm it up, idle in neutral on level ground, read the dipstick
- B. Check the fluid with the vehicle in drive and the brakes released
- C. Check the fluid after raising the vehicle on a tilt-cab hoist
- D. Check the fluid with the engine off and the transmission stone cold

38. A 60-watt work lamp on a 12-volt trailer circuit is checked with a clamp meter. What current should the circuit draw?

- A. 12 amps
- B. 5 amps
- C. 0.2 amps
- D. 720 amps

39. A technician finds water on the driver's floor after rain, and the door seal looks intact. Which area should be checked next?

- A. The reefer fuel cap and the standby power connection
- B. The brake drum seal and the wheel hub vent
- C. The engine oil dipstick tube and the filler cap
- D. The cowl drains, windshield seal, and door drain holes

40. A technician finds cupped tread wear in a series of low spots around a trailer tire. Which condition is the most likely cause?

- A. A low coolant reading at the radiator surge tank
- B. A tight clutch pedal free play adjustment
- C. Too much steering gear free play at the front axle
- D. Worn shocks or an out-of-balance wheel letting the tire bounce

41. A DEF tank sample is measured with a refractometer and reads 25 percent urea. What is the correct conclusion and action?

- A. It is diluted below 32.5 percent, so drain and refill with certified DEF
- B. The fluid is fine if the heater cycle is working during the winter test
- C. The fluid is acceptable, because anything between 20 and 40 percent works in SCR systems
- D. The fluid should be topped up with straight urea powder until it reaches 32.5 percent

42. A technician fills a spray bottle from a bulk drum of parts-washing solvent for use at the bench. Under WHMIS 2015, what must the bottle carry?

- A. A handwritten note giving the solvent's name and the date it was poured
- B. A supplier label copied from the drum, including the supplier's address and batch number
- C. A workplace label with the product identifier and safe-handling information referring to the safety data sheet
- D. Nothing, because the bottle is used only by the technician who filled it that shift

43. After repositioning the sliding tandem on a dry van, the driver notices the trailer feels unstable. Which check is the most important before moving the trailer?

- A. Measure the coolant freeze point at the radiator
- B. Verify that every locking pin is fully engaged
- C. Check the trailer's side marker lamp colour
- D. Check the cab air conditioning compressor belt tension

44. A technician finds a hydraulic filter bypass indicator in the red zone on a cold morning but green after warm-up. What does this show?

- A. The reservoir is overfilled and should be drained by half
- B. Cold, thick fluid raises pressure drop, so recheck after warm-up
- C. The filter has failed completely and must be replaced immediately
- D. The pump has lost all pressure and needs a replacement

45. After a long downhill route, a technician finds one rear drum much hotter than the others, and the wheel is hard to turn by hand. What is the most likely cause?

- A. A low tire pressure on the dual wheel at the same position
- B. A leaking wheel seal that has wetted the lining with oil
- C. A weak parking brake spring in the neighbouring chamber
- D. A seized cam or slack adjuster that is not releasing the shoes

46. After a clutch replacement on an automated manual transmission, the vehicle launches harshly and shifts roughly. Which action should be performed?

- A. Add a quart of extra gear oil to soften the shifting
- B. Disconnect the batteries overnight to reset the shift pattern
- C. Run the clutch touch-point calibration procedure with the scan tool as the manufacturer directs
- D. Increase the engine idle speed by 200 rpm to smooth the launch

47. A fuse for the trailer lighting circuit blows every time the tractor connects to a trailer. The fleet supervisor suggests fitting a larger fuse. What is the correct response?

- A. Find and repair the short, then fit the correct-rated fuse
- B. Bypass the fuse holder with a length of wire to keep lights on
- C. Fit a fuse of double the rating so the circuit will carry the fault current
- D. Replace the fuse with a circuit breaker of any rating in the fuse panel

48. A tractor throws an SCR efficiency fault after a long winter shutdown, although the DEF level is full and quality tests normal. Which check is the most logical next?

- A. Replace the diesel particulate filter because efficiency faults come from soot
- B. Replace the turbocharger, since low boost reduces urea conversion
- C. Inspect the DEF doser and lines for crystals or blockage
- D. Flush the coolant system, since coolant contamination blocks DEF flow

49. A technician finishes an air conditioning repair and wants to remove moisture and air from the system before adding refrigerant. Which step is correct?

- A. Add refrigerant first and vent the system to remove the air
- B. Pull a vacuum for at least 30 minutes and check it holds
- C. Leave the system open overnight so the moisture evaporates
- D. Blow compressed shop air through the system to dry it

50. A reefer trailer sits lower on the left side after loading, and the height control valve linkage is intact. What should the technician check next?

- A. The gladhand seals at the front of the trailer
- B. The reefer unit's fuel tank cap and breather vent
- C. The left landing gear foot pad for wear
- D. The left air spring and height control valve

51. A scan tool shows an insulation resistance fault on a battery electric truck's high-voltage system. What does this indicate?

- A. Current may leak between a high-voltage conductor and the chassis, so the system must be isolated
- B. The 12-volt battery has a loose terminal at the post and is causing a slow voltage sag at the module
- C. The air conditioning refrigerant charge is slightly low, which is lowering the compressor motor efficiency
- D. The windshield wiper motor is running at slow speed because its supply voltage is low

52. A technician tests a tractor protection valve by disconnecting the trailer supply gladhand with the engine running. What should happen?

- A. The tractor supply line vents briefly and the valve closes
- B. The tractor service brakes should apply automatically on both axles
- C. The compressor should unload immediately and stay unloaded for a minute
- D. Air should continue to flow freely from the supply gladhand at full pressure

53. A driveshaft makes a chirping noise at low speed that changes with the vehicle's speed and stops when the vehicle is stationary. What is the most probable cause?

- A. A damaged turbocharger shaft that is spinning at idle
- B. A dry or worn universal joint that needs service or replacement
- C. A cracked transmission case that is leaking oil on the shaft
- D. A weak battery that is not supplying the starter motor

54. A technician repairs a damaged wire in an exposed engine harness near the frame. Which method is the most durable and acceptable?

- A. Twist the wires together and wrap them with several layers of electrical tape
- B. Use a scotch-lock tap and leave the splice unprotected in the harness
- C. Join the wires with a wire nut and tuck the joint under the loom
- D. Use a crimped or soldered splice covered with adhesive-lined heat shrink tubing

55. A fuel filter housing on a tractor is drained of a milky liquid, and the unit shows water in fuel at minus 25 degrees Celsius. What is the best corrective step?

- A. Open the bleed screw only and run the engine until the lamp goes off
- B. Replace the fuel injectors, since water damage appears there first
- C. Drain the separator, replace filters, and find the water source
- D. Add an alcohol-based fuel dryer and keep running the engine

56. A technician finds a cracked main leaf in a rear leaf spring pack on a straight truck. What is the best repair practice?

- A. Add a strap around the pack and place the truck back in service
- B. Weld the cracked leaf and keep the spring pack in service
- C. Replace the spring pack and the matching spring on the other side
- D. Remove the cracked leaf and keep the rest of the spring pack

57. A technician checks the engine data link with the power off and measures 120 ohms between CAN high and CAN low at the diagnostic connector. What does this show?

- A. The bus is correct because 120 ohms is the expected reading
- B. One terminating resistor is open or missing
- C. The bus is shorted between the two wires inside the harness
- D. The bus needs a third terminating resistor to reach the target

58. During a periodic commercial vehicle inspection, a technician finds a cracked frame rail beside a rear suspension hanger on a dry-van tractor. What is the correct action?

- A. Record the defect on the inspection report and fail the unit until the rail is repaired
- B. Pass the unit and advise the driver to report any change in handling
- C. Drill a stop hole at the crack tip and pass the unit with a note
- D. Weld a plate over the crack and pass the unit if the weld looks clean

59. A technician checks a dry-van trailer for roof and door seal leaks. Which inspection method is the most effective?

- A. Smell the air for moisture at the trailer front wall
- B. Tap the roof panels with a hammer to find cracks by sound
- C. Spray the trailer interior with paint to show the leak locations
- D. Inspect inside in bright daylight with the lights off for light leaks

60. A dump body cylinder slowly drifts down when the lever is released, and the technician finds fluid leaking inside the cylinder past the piston seal. What is the correct repair?

- A. Tighten the rod gland nut to eliminate the internal leak
- B. Replace the piston seals and inspect the bore and rod
- C. Replace the pump with a larger capacity pump
- D. Add thicker oil so the leak will be reduced

61. A technician finds heavy oil in the wet tank of a tractor, and the compressor discharge line has hard carbon deposits. Which cause should be checked first?

- A. A slow-closing engine thermostat that is keeping coolant too hot
- B. A loose gladhand seal at the front of the trailer
- C. A worn brake pedal valve that is allowing air to flow backward
- D. A restricted compressor air inlet that draws oil past the rings

62. A coach shows a deep rumbling noise and vibration under the floor at highway speed, and a technician finds the centre support bearing rubber cracked and the bearing loose. What is the correct repair?

- A. Replace the centre bearing and check shaft alignment and balance
- B. Shorten the driveshaft by 50 mm to remove the bearing entirely
- C. Fill the rubber cracks with sealant and leave the bearing in place
- D. Tighten the driveshaft bolts to double the specified torque

63. A technician checks the intake restriction gauge on a tractor that runs through gravel pits. The indicator shows the maximum restriction, but the filter looks clean on the outside. What is the best step?

- A. Ignore the gauge, because a clean-looking filter is always acceptable
- B. Reset the indicator and let the vehicle continue to its next service
- C. Check the intake piping and pre-cleaner, and confirm the gauge setting
- D. Replace the turbocharger because it is starving for air at the inlet

64. During a coupling test, a technician pulls forward gently and the trailer kingpin slips out of the fifth wheel jaws. What does this show?

- A. The trailer brakes need adjustment before the coupling is complete
- B. The tractor engine needs more power to hold the trailer
- C. The fifth wheel lock is not engaging and needs repair before use
- D. The trailer is correctly coupled since the kingpin is meant to slide

65. A scan tool shows an engine coolant temperature sensor reading minus 40 degrees Celsius, with a fault code for voltage above normal or shorted high. What is the most likely cause?

- A. A low coolant level that exposes the sensor to air
- B. A shorted sensor wire touching the engine block ground
- C. A defective thermostat holding the coolant permanently cold
- D. An open circuit or an unplugged connector at the sensor

66. A technician finds blue-grey smoke at idle and a rattling noise at the turbocharger. A shaft play check shows 1.2 mm of axial play. What is the correct conclusion?

- A. The turbocharger bearings are worn beyond limit and the unit needs replacement
- B. The play is normal and the smoke comes from a stuck thermostat
- C. The play is fine because turbo shafts need about 1 mm of free movement

D. The smoke indicates only an injector problem that needs an engine flush

67. A tractor's primary air gauge falls to zero after a hose break in the rear service circuit, while the front circuit gauge holds at normal pressure. What does this show about the system design?

- A. The trailer supply valve has closed and must be reset by hand
- B. The dual circuit design isolates the failed circuit so the front brakes still work
- C. The air compressor has automatically switched to the secondary circuit
- D. The system has failed both circuits and the vehicle cannot be stopped

68. A differential ring gear has 41 teeth and the drive pinion has 11 teeth. What is the axle ratio, to two decimal places?

- A. 0.27 to 1
- B. 3.73 to 1
- C. 3.37 to 1
- D. 4.10 to 1

69. A cab air suspension on a coach leaves the front of the cab low even after the system is aired up. Which fault is the most probable?

- A. A weak starter relay in the engine compartment
- B. A worn engine mount on the driver's side
- C. A damaged fifth wheel top plate on the tractor
- D. A leaking cab air spring or bad height valve

70. A technician finds water dripping inside the cab from the HVAC housing in summer, and the evaporator drain tube is blocked. What is the correct repair?

- A. Replace the compressor since it is producing extra water
- B. Block the fresh air intake to dry the housing air

- C. Clear or replace the evaporator drain tube
- D. Add more refrigerant until the dripping stops

71. On a dry-van trailer, the right turn lamp glows dimly and the license plate lamp flashes with the brake lamps. Which fault is the most probable?

- A. A poor ground connection at the trailer wiring, which makes current seek alternate paths
- B. A worn brake pedal switch that is sending the wrong signal
- C. A weak battery in the tractor that powers the whole trailer
- D. A failing alternator that makes the voltage cycle quickly

72. A technician installs a trailer landing gear after repair and finds that it binds when cranked at the high end of travel. What is the most reasonable action?

- A. Force the crank with a long pipe until it moves freely through the tight section
- B. Leave it as is since landing gear is not safety related and only moves empty trailers
- C. Remove the gear box lubricant to reduce internal friction and make the crank easier
- D. Inspect for bent legs, dry gears, and damage, and correct them before use

73. A technician measures fuel rail pressure on a common-rail engine and finds it below target at high load but normal at idle. Which fault is the most probable?

- A. A restricted fuel supply or weak high-pressure pump
- B. A leaking exhaust manifold gasket upstream of the turbocharger
- C. A worn starter drive that reduces cranking speed at start-up
- D. A defective coolant temperature sensor that always reads cold

74. A trailer in a fleet yard has its red supply knob pop out soon after being connected to a tractor, and the trailer brakes lock on. What is the most likely explanation?

- A. The trailer's service line is crossed with the emergency line

- B. Trailer supply pressure dropped below the valve's holding level because of a supply line leak
- C. The trailer ABS module has detected an incorrect wheel speed signal
- D. The tractor protection valve is stuck open at the cab

75. A drive axle emits a howl only while the vehicle is coasting, and not when pulling under load. Which area should be examined most closely?

- A. The wheel stud torque at both ends of the axle
- B. The clutch release bearing at the transmission bell housing
- C. The coast-side contact pattern and pinion bearing preload
- D. The air dryer purge valve under the cab

76. An outside micrometer shows 25.5 mm on the sleeve and the thimble line at 0.37 mm. What is the reading?

- A. 26.37 mm
- B. 25.50 mm
- C. 25.87 mm
- D. 25.37 mm

77. A reefer's compressor discharge pressure is much higher than normal on a hot day, and the unit cannot hold the setpoint. Which condition should the technician check first?

- A. The trailer's reflective tape condition and how well it is bonded
- B. The trailer's landing gear gearbox oil level and its condition
- C. The tractor's turbocharger oil supply line and its fittings
- D. A dirty or blocked condenser coil and condenser fan operation

78. A technician replaces a hydraulic hose on a lift and wants to route it correctly. Which practice is correct?

- A. Route it with a gentle bend, no twist, away from heat
- B. Pull it tight so it has no slack in any operating position
- C. Twist the hose to align the fittings during installation
- D. Run it against the exhaust pipe to keep the oil warm

79. A technician load tests a 1,000 CCA battery at half its rated cold cranking amps for 15 seconds, and the voltage falls to 8.9 volts. What is the result?

- A. The battery needs a longer load of 30 seconds to be judged properly
- B. The battery fails the test and should be replaced
- C. The test is invalid unless the load is raised to the full CCA rating
- D. The battery passes because 8.9 volts is acceptable under load

80. After a tire change, the tire pressure monitoring display shows no reading for the new tire on a coach. What is the likely cause?

- A. The brake drum has to be replaced for the sensor to work
- B. The tire needs 100 kPa more pressure before the sensor reports
- C. The new sensor must be relearned to the module
- D. The wheel bearings need adjustment to power the sensor

81. A technician performs a coolant system pressure test at 100 kPa and the gauge falls slowly with no visible leak, but oil on the dipstick looks milky. What is the most likely cause?

- A. A loose clamp on the upper radiator hose
- B. A worn radiator cap seal that lets pressure out of the surge tank
- C. A coolant filter that has been overtightened on its base
- D. A cracked head or failed oil cooler core leaking coolant into oil

82. A charging system measures 15.3 volts at 1,800 rpm with no electrical load, and the batteries smell of sulphur. What is the probable cause and action?

- A. A loose drive belt that must be tightened to the maximum tension
- B. A faulty voltage regulator or sense circuit needing repair
- C. A missing ground cable at the starter that needs replacement
- D. A weak battery that needs a boost charge before the next trip

83. A technician finds the inboard pad on an air disc brake caliper worn to half the thickness of the outboard pad. Which fault is the most probable cause?

- A. A seized caliper slide pin that blocks floating movement
- B. A weak torque on the lug nuts after the last tire change
- C. A leaking brake chamber diaphragm on the opposite wheel
- D. A low coolant level at the engine reservoir during the trip

84. A driver asks when to engage the driver-controlled main differential lock on a drive axle. What is the correct advice?

- A. Engage it all the time to give the best fuel economy on dry roads
- B. Engage it at highway speed to improve the stability on corners
- C. Engage it only when the vehicle is empty on a straight road
- D. Engage it before traction is lost at low speed, then release

85. A fleet technician notes that a hybrid truck's friction brake pads last far longer than those of a conventional truck. What is the most reasonable explanation?

- A. Hybrid trucks never use their friction brakes during any stop
- B. Regenerative braking slows the truck, so friction brakes do less work
- C. The brake fluid in hybrids has a higher boiling point only
- D. The truck uses lighter pads that last longer by design

86. A technician replaces a hub-piloted wheel on a tractor and tightens the nuts to specification. What follow-up step is best practice?

- A. Retorque after the first 80 to 160 km of driving
- B. Retorque only if the driver reports a noise or vibration
- C. Retorque them after the first 800 to 1,600 km of driving
- D. Never retorque since the first torque is permanent

87. A technician adjusts valve lash on an engine with the specified feeler gauge. When the gauge is withdrawn, it slides with no drag. What is the correct action?

- A. Accept the setting because a free-sliding gauge indicates the lash is perfect
- B. Increase the clearance by a further 0.1 mm to guard against heat expansion
- C. Reduce the gap until the gauge shows a light drag
- D. Replace the rocker arm since the clearance cannot be set correctly

88. A technician wants to find a slow refrigerant leak in a coach air conditioning system with no visible oil traces. Which method is most appropriate?

- A. Open the system and wait for the pressure to drop to zero
- B. Run the engine at high speed and listen for the leak noise
- C. Pour water over the lines and watch for bubbles on the hoses
- D. Use an electronic leak detector or add UV dye and inspect with the lamp

89. A driver reports a single click when turning the key and no cranking, though headlights stay bright. Which test should be performed first?

- A. Measure voltage drop across the solenoid contacts and cables
- B. Charge the batteries on the quick charger for two hours
- C. Replace the ignition key since the click shows a worn lock cylinder
- D. Change the engine oil to a lighter grade to ease the cranking load

90. A technician measures the push rod stroke on both brakes of one axle and finds one 20 mm shorter than the other, with the shorter side showing a darker drum. What is the most reasonable conclusion?

- A. The brakes are balanced because stroke is always different from side to side
- B. They are unbalanced, and the short-stroke side may be binding
- C. The difference proves the longer stroke has a leaking chamber diaphragm
- D. The longer stroke side must have a worn engine bearing connected to it

91. A drive axle shows gear oil on the inside of a wheel and the brake lining on that wheel end. The axle breather is found plugged with dirt. How are the two findings related?

- A. A plugged breather makes the oil thicker, which blocks the seal lip
- B. There is no relation, since the breather is only a cosmetic part
- C. Plugged breather pressure pushes oil past the wheel seal
- D. A plugged breather cools the oil, which makes the seal expand and leak

92. A fleet manager asks to put API FA-4 oil in an older tractor that is currently run on CK-4. What should the technician advise?

- A. Choose FA-4 only if the engine runs mostly at idle in cold winter service
- B. Use FA-4 in any engine since it is the newest and covers every older category
- C. Mix FA-4 with the CK-4 already in the sump to improve fuel economy gradually
- D. Use FA-4 only if the manufacturer approves it for that engine

93. A technician inspects the upper coupler plate on a trailer and finds a bent plate, worn kingpin, and cracks at the welds. What is the right decision?

- A. Keep the trailer in service with a note for the next scheduled inspection
- B. Add a heavy weld bead over the cracks and continue to use it
- C. Remove the trailer from service until the coupler is repaired
- D. Grind the kingpin smooth and reuse the plate at once

94. A technician is told that a lift's hydraulic relief valve is set too high and could damage components. What is the correct way to set it?

- A. Fit a gauge and adjust the relief to the specified pressure
- B. Set it by ear until the pump sounds as loud as possible
- C. Replace the relief valve with a plug to remove its function
- D. Turn the adjuster screw all the way in to give maximum power

95. A technician installs a cartridge-style spin-on oil filter on a tractor. Which installation practice is correct?

- A. Fill the filter with fuel to help the engine start easily after service
- B. Oil the gasket, prefill if specified, and turn the specified amount
- C. Dry-fit the gasket and tighten with a strap wrench as tight as possible
- D. Apply thread sealant to the filter threads to prevent seepage at idle

96. A technician inspects a tire that has a cut through the sidewall cords and a bulge. What is the correct decision?

- A. Patch the cut from the inside and return the tire to service
- B. Inflate the tire to a higher pressure to hide the bulge
- C. Move the tire to a trailer position where loads are lighter
- D. Remove the tire, since cord damage in the sidewall cannot be repaired

97. A technician replaces a bonded windshield on a coach. Which practice follows good installation procedure?

- A. Use the specified urethane and primers and observe drive-away time
- B. Use weather stripping tape only to hold the glass at the edges
- C. Apply glue sparingly at the corners to save time and material
- D. Use silicone bathroom sealant and return the coach straight away

98. A coach's dash fuel gauge reads empty although the tank is half full, and the sender resistance measures open at all float positions. What is the correct repair?

- A. Re-flash the engine module so it relearns the tank capacity
- B. Replace the fuel level sender or repair its open wiring
- C. Replace the instrument cluster since the gauge itself has failed
- D. Add fuel to the tank until the gauge begins to respond normally

99. A technician hears a delayed release of the trailer brakes after the driver lets off the pedal, and the air exhausts slowly from the relay valve. Which repair is the most logical?

- A. Replace the compressor since release speed depends on air supply volume
- B. Replace the trailer tires since release speed depends on tread pattern
- C. Clean or replace the sticky or restricted relay valve
- D. Increase the governor cut-out pressure to speed up air flow

100. A transmission output retarder gives weak braking, and the technician finds the fluid level correct. Which check should come next?

- A. Test the retarder valve control signal and supply
- B. Increase the engine idle speed to raise the retarder output
- C. Replace the rear axle ratio with a lower numerical ratio
- D. Replace the front wheel bearings at the steer axle

101. A turbocharged tractor loses power under load, and a hissing noise is heard as boost builds. The charge-air cooler pressure test shows a rapid decay. What is the most probable repair?

- A. Replace the camshaft since boost loss starts in the valvetrain
- B. Replace the air filter element since a clean one reduces power loss
- C. Replace or repair the leaking charge air cooler or a split connection hose
- D. Increase the wastegate setting to raise boost above the specification

102. A blower motor in a tractor works only on the highest speed setting. Which component is the most likely cause?

- A. The cabin air filter, which is restricting airflow on every speed
- B. The compressor clutch coil, which is open at low engine speed
- C. The thermostat that controls the engine coolant temperature
- D. The blower resistor pack or speed control module

103. A technician finds that a trailer tandem tracks slightly to one side of the tractor on a straight road, and the tires wear unevenly. Which check best addresses the problem?

- A. Change the tractor's engine oil to a heavier grade
- B. Measure and correct axle squareness to the trailer centreline
- C. Increase the reefer unit's fan speed in cold weather
- D. Replace the trailer's air dryer and the supply hose

104. A technician finds a high crankcase pressure reading on a high-mileage engine with a plugged crankcase ventilation filter. What can this condition cause?

- A. A cleaner intake manifold as vapour is retained in the sump
- B. Greater compression because the oil seals piston rings more tightly
- C. Oil leaks past seals and gaskets as crankcase pressure forces oil out
- D. Lower oil temperature since the sump pressure cools the oil

105. A tractor's heater blows cold air on a freezing morning, though the engine has reached its normal temperature, and the heater hoses at the firewall feel one hot and one cold. What is the most probable cause?

- A. A plugged heater core or stuck heater control valve
- B. A low refrigerant charge in the air conditioning system
- C. A worn compressor clutch on the air conditioning compressor
- D. A cracked cabin air filter housing at the glovebox

106. A technician carries out an air system build-up test and notes that pressure climbs slowly and stalls near 550 kPa at fast idle, with the governor not yet at cut-out. Which is the best first suspect?

- A. A weak starting battery on the second tractor in the fleet
- B. A worn compressor or a system leak matching its output
- C. A mislabeled instrument cluster that reads in the wrong units
- D. A damaged tire pressure monitoring sensor on the rear axle

107. An oil analysis from a manual transmission shows high iron and copper along with metal particles on the drain plug magnet. What is the most reasonable action?

- A. Replace the clutch since transmission metal comes from the flywheel
- B. Ignore the report since all transmissions contain some metal
- C. Add a friction modifier and extend the oil change interval
- D. Inspect for gear or bushing wear and plan the repair

108. A technician finds the telematics device on a fleet tractor was wired with a continuous power feed and is the likely source of a nightly battery drain. What is the best fix?

- A. Remove the device and discard it, since all telematics units drain batteries
- B. Fit a larger battery bank so that the draw is hidden from the driver
- C. Rewire it to an ignition-switched or managed circuit and re-measure
- D. Disconnect the battery ground only at the end of the weekend

109. A technician needs to attach a bracket to a frame rail on a tractor. Which approach follows good practice?

- A. Use existing holes or bolted brackets that follow the maker's drilling rules
- B. Weld the bracket directly to the top flange with a heavy bead
- C. Torch-cut a slot through the web to make the bracket fit
- D. Drill holes through the top and bottom flanges at any convenient spot

110. A technician must weld a bracket onto the frame of a modern tractor with several electronic control modules. Which preparation best protects the electronics?

- A. Turn the ignition on so the modules can absorb stray current safely
- B. Disconnect the battery and module connectors, and clamp the ground near the weld
- C. Leave the batteries connected so the modules keep their stored memory
- D. Clamp the welding ground to the rear axle and weld from the cab side

111. A fleet schedules service on its reefer engines, and the technician asks whether to base the intervals on distance or on engine hours. What is the best answer?

- A. Distance travelled, since reefer units run only while the trailer moves
- B. Calendar time only, since hours are not tracked on reefer units
- C. Engine hours, since reefer engines run while the trailer is parked
- D. Fuel purchased by the tractor, since both share a tank

112. A technician must work on a hydraulic circuit that contains an accumulator. What step must come before opening any line?

- A. Run the pump for ten minutes to remove the pressure
- B. Heat the accumulator to make the gas pressure fall
- C. Open the nearest fitting slowly to find out whether it is pressurized
- D. Relieve the stored pressure using the manufacturer's procedure, then verify zero

113. A technician tests an engine retarder (compression brake) that gives weak retarding on one bank of cylinders. What is the best first check?

- A. Flush the cooling system to improve heat transfer at the cylinders
- B. Check the brake solenoid oil supply and slave piston lash
- C. Replace the turbocharger since weak braking results from low boost
- D. Increase the engine idle speed so the retarder works harder

114. A technician tests a diode in a charging circuit with a digital multimeter in diode test mode. What reading indicates a good diode?

- A. About 0.5 to 0.7 volts one way and open the other way
- B. A reading of zero in both directions across the diode
- C. An open reading in both directions across the diode
- D. A reading of 12 volts in both directions across the diode

115. A technician reads a trailer ABS system after a driver reports the trailer lamp stays on, and finds no power at the ABS connector pin with the tractor ignition on. What is the most logical next step?

- A. Replace the wheel speed sensors since they provide power to the module
- B. Reset the tractor engine module with a keyed power cycle
- C. Replace the trailer brake chambers since the module needs air pressure
- D. Trace the supply wiring, connector, and fuse to the ABS module

116. A technician replaces a self-adjusting clutch and notices the wear indicator on the new unit is at its full-new position. What should be done on the next service?

- A. Ignore the indicator since it has no relation to the wear of the clutch disc material
- B. Adjust the clutch by turning the adjuster ring a full turn at every second service
- C. Remove the indicator so that the clutch will appear new during every future inspection
- D. Record the wear indicator at each service and replace at the worn range

117. A technician checks vertical play in a steer axle king pin by raising the axle and using a dial indicator. The reading exceeds the specification. What does this show?

- A. Worn king pin bushings or thrust bearing
- B. The tires are inflated beyond the limit for the axle rating
- C. The steering gear needs fluid from the power steering reservoir
- D. The brake chambers have a pushrod stroke beyond the limit

118. A technician is asked how to identify high-voltage cables on a battery electric truck. What is the standard identifier?

- A. They are blue and connected to the air conditioning unit
- B. They are orange and run in marked conduits
- C. They are black and bundled inside the cab floor mat
- D. They are red and sit near the standard 12-volt wiring

119. A technician finds a sweet coolant odour inside the cab and a damp passenger carpet on a tractor. What is the most likely source?

- A. A split radiator tank at the bottom of the cooling module
- B. A worn water pump seal leaking at the front of the engine
- C. A leaking heater core or its connecting hoses
- D. A failed head gasket venting coolant out the exhaust

120. A technician examines an LED trailer lamp that does not light, though it shows full voltage and a good ground at the connector. What is the correct conclusion?

- A. The bulb needs a replacement filament in the sealed unit
- B. The trailer wiring needs a larger fuse in the tractor circuit
- C. The lamp works only on direct sunlight and darkness is the fault
- D. The lamp assembly is faulty, and sealed LED units are replaced whole

121. During a fleet inspection, a technician finds a seat belt with frayed webbing and a latch that does not hold. What action is correct?

- A. Replace the seat belt assembly, since it cannot be repaired
- B. Tape the latch closed so the belt appears to be fastened
- C. Pass the unit and tell the driver to wear it loosely
- D. Stitch the frayed section and keep the latch as it is

122. A fleet technician sees a reservoir drain valve frozen shut on a tractor in January, even though the compressor cycle seems normal. Which preventive action best addresses the problem?

- A. Remove the drain valve permanently so the tank always vents
- B. Check the air dryer and heater, and drain the tanks regularly
- C. Add methanol to the air tanks by the dozen drops at every refuel
- D. Run the engine at fast idle for ten minutes before every trip

123. A tractor with an automatic transmission overheats the transmission fluid after hauling a heavy load up a long grade, and the fluid smells burnt. What is the most appropriate response?

- A. Add a quart of a different fluid type to improve cooling
- B. Reset the shift schedule and keep running the load as before
- C. Replace the clutch in the engine bell housing without checking fluid
- D. Check the cooler, lines, and level, then change fluid and filters

124. A technician installs a new hub seal on a drive axle wheel end. Which step will prevent early failure?

- A. Coat the sealing lip with thread sealant before pressing it in
- B. Install the seal with the lip facing away from the oil
- C. Seat it squarely with the correct driver, lip toward the oil
- D. Hammer the seal in with a punch placed on the metal outer edge

125. A technician reviews a fleet engine report showing frequent idling above 40 percent of engine run time. Which maintenance step suits this duty cycle best?

- A. Increase the coolant concentration to 70 percent glycol for better cooling
- B. Extend the oil interval since idling produces less wear than driving
- C. Shorten the oil interval and watch for fuel dilution
- D. Remove the thermostat to keep the engine cooler during idling

126. A technician finds the air conditioning compressor clutch cycles on and off rapidly every few seconds, and the low-side pressure falls close to zero each time. What is the most likely cause?

- A. A low refrigerant charge triggering the low-pressure cut-out switch
- B. An overcharged system opening the high-pressure relief
- C. A new cabin air filter that is slightly too thin
- D. A stuck engine thermostat that is holding the coolant cool

127. A technician measures a speed sensor on a vehicle with an AC voltmeter at the connector and finds no AC voltage when the wheel turns by hand. What is the most likely cause?

- A. The engine thermostat is stuck closed and has cooled the sensor
- B. A bad sensor, excessive air gap, or damaged tone ring
- C. The alternator is overcharging and is saturating the magnet
- D. The battery is too weak to excite the sensor field

128. An apprentice leaves out the wheel chocks before raising a trailer's axle on a jack. What is the best response from the journey person?

- A. Stop the job, explain the hazard, demonstrate, and watch a repeat
- B. Let the job finish, then mention it in the apprentice's end-of-term review
- C. Quietly add the chocks later and continue so the work stays on schedule
- D. Send the apprentice to read the shop safety manual until the next morning

129. A trailer ABS lamp stays on during a pre-trip, and the trailer's power and ground at the connector tested good. What is the most reasonable next step?

- A. Replace the trailer's tires to improve the wheel speed signal that the module is reading
- B. Read the trailer ABS fault code through the blink code or a diagnostic tool
- C. Disconnect the trailer ABS lamp bulb from the cab so the driver is no longer distracted
- D. Increase the air pressure in the suspension to 900 kPa so the sensors receive more signal

130. A technician finds hydraulic fluid that is dark and smells burnt, and the oil analysis shows heavy particle counts. What is the best action?

- A. Add a fluid conditioner to restore the colour of the oil
- B. Remove the filters so the oil can flow more freely
- C. Top up the reservoir with new fluid and continue operation
- D. Find the cause, flush the system, and replace fluid and filters

131. A technician inspects a brake drum on a dry-van trailer and finds fine surface heat checks, plus one crack that runs from the friction surface to the drum's open edge. What should be done?

- A. Reuse the drum after coating the crack with high-temperature paint
- B. Turn the drum on the lathe until the crack disappears from view
- C. Replace the drum, since an edge crack cannot be machined out
- D. Weld the crack and machine the weld flush with the friction surface

132. A tractor's clutch slips after a recent period of normal use, and the technician finds oil on the disc surface. Which source should be investigated first?

- A. The air compressor discharge line near the cab
- B. The windshield washer reservoir and its supply hose
- C. The engine rear main seal or input shaft seal
- D. The coolant overflow tank cap and its seal

133. A truck pulls steadily to one side while rolling, and the technician finds the left front tire is 140 kPa lower than the right. Which action is the most appropriate first?

- A. Set both tires to specification and re-test before alignment changes
- B. Replace the steering gear since it is the most likely cause
- C. Swap the front tires side to side and leave them uninflated
- D. Change the caster setting at the king pin by two full degrees

134. A tractor cranks normally at minus 30 degrees Celsius but will not start, and the intake air heater grid never warms during the wait-to-start cycle. Which check comes first?

- A. Change the engine oil to a heavier grade to raise compression
- B. Replace the injectors since cold starts depend on spray pattern alone
- C. Add extra starting fluid to the intake until the engine fires at once
- D. Test power at the heater relay and element, then the control signal

135. A tractor's engine control module will not communicate with the scan tool, and all dash gauges that depend on it are dead. Which check is the best first step?

- A. Reprogram the module with the newest software from the manufacturer
- B. Test the module's fuses, ignition feed, and grounds at its connector
- C. Replace the module since a communication loss always indicates failure
- D. Disconnect both batteries for an hour so the memory is erased

Practice Exam 8: Answer Key and Explanations

- 1. D** — Voltage drop equals current multiplied by resistance: 400 amps times 0.0012 ohm equals 0.48 volts. This is near the upper end of typical allowances for a starter cable. A tenfold decimal slip gives 4.8 or 0.048 volts, and 0.33 volts comes from dividing current by a conversion rather than multiplying.
- 2. B** — Fuel in the oil thins it and lowers viscosity, and the common sources are a leaking injector, a cracked injector line, or a failing pump seal. Overfilling raises the level but does not add fuel. A normal oil grade would not thin, and dust shows up as silicon and wear metals rather than fuel dilution.
- 3. A** — Heavy truck steering should have only a small amount of free play at the wheel rim, and 90 mm is excessive, so the steering gear, drag link, tie rod ends, and king pins should be inspected. Large wheels are not an excuse, tire pressure does not cause rim play, and brake adjustment is not related.
- 4. A** — An air dryer relies on a purge cycle at governor cut-out to expel moisture and contaminants. If the purge valve or the governor signal that triggers it fails, moisture builds in the tanks. A slightly open drain would drop air pressure, a leaking pedal valve is felt at application, and an unloader fault affects pressure, not drying.
- 5. B** — Free play ensures the release bearing is not touching the fingers when the pedal is up. With none, the bearing rotates constantly and wears quickly, and it reduces clamp load, allowing slip and heat. Pedal effort does not rise because of free play, the clutch can still engage in theory, and constant partial release harms the disc.

- 6. D** — A reefer can start without warning, so the hazardous energy must be isolated before hands enter the evaporator housing. Switching off, removing the key, and disconnecting standby power and the battery stops every start path. Signs, a changed setpoint, or fast work are administrative or personal measures that cannot physically prevent a sudden fan start.
- 7. C** — Fresh produce needs constant air circulation to keep temperatures uniform and remove heat of respiration, so continuous mode is normally used, while start-stop suits frozen loads that hold temperature. Always choosing start-stop ignores produce needs, and the claim that it prevents freezing or does not matter is not correct. Matching the mode to the cargo protects quality.
- 8. C** — Speed equals flow divided by piston area. The area of an 80 mm bore is about 50.27 square centimetres, and 30 litres per minute is 30,000 cubic centimetres per minute, giving about 597 centimetres per minute, or 9.9 centimetres per second. Using the radius for diameter or skipping a unit conversion gives the other values.
- 9. D** — A current measurement needs the meter in series so all current flows through it, and the connection is made on the negative cable after control modules have gone to sleep, which can take several minutes. Placing an ammeter across the posts creates a short, and the other positions measure cranking or charging current, not the key-off drain.
- 10. A** — Coolant disappearing with sweet-smelling white vapour points to coolant entering the combustion path through a head gasket or an EGR cooler. A combustion gas test shows exhaust gases in the coolant, and a pressure test of the cooler locates the leak. Battery load or fuel pump flow tests do not address coolant loss.
- 11. B** — Low pressure on both sides with bubbles in the sight glass indicates a shortage of refrigerant, so the system should be leak tested, repaired, and recharged to specification. An overcharge or blocked condenser would raise high-side pressure, and a plugged cabin filter reduces airflow, not refrigerant pressure. Topping up without a leak check would only delay the same failure.
- 12. B** — Foam in power steering fluid and a whining pump usually mean air is entering the suction side, from a low level or a loose or cracked hose. Engine coolant does not normally mix into the circuit, a hydraulic pump is not driven by the alternator, and a cracked wheel rim does not affect pump fluid.
- 13. A** — Air escaping from a chamber during a full service application means the service diaphragm is not sealing, so the chamber must be repaired or replaced. Normal chambers hold pressure steadily. The spring section is pressurized only when the park brake is released, and brake lining wear cannot bleed air from a sealed chamber.
- 14. C** — A noise that occurs only while the pedal is down points to the release bearing, which rotates against the pressure plate fingers only when the clutch is released. A pilot bearing noise changes when the pedal is down in neutral and loses it in gear, spline wear gives rattles, and a rear seal makes no noise.
- 15. D** — A cab latch warning shows the cab may not be secured, which is a serious hazard in a collision or braking, so the latch, striker, and sensor are inspected and repaired before the vehicle moves. Ignoring

the lamp, driving slowly, or blocking the lens leaves an unsecured cab. The lamp is a safety warning, not a nuisance.

16. D — Series connection adds voltage but not current capacity, so two 12-volt batteries make 24 volts while the cranking amp rating stays at 900. Parallel connection would add capacity and keep 12 volts. A 24-volt result with 1,800 amps mixes both effects, and 12 volts with either rating describes a single battery or parallel pair.

17. C — A thermostat stuck partly open lets coolant flow to the radiator before the engine reaches operating temperature, which explains both the low gauge reading and the weak heater. A failed impeller or plugged fins would cause overheating, and a locked fan clutch would only add cooling in cold weather, so the thermostat is the first suspect.

18. B — Even after the service disconnect is removed, capacitors may hold charge, so the technician waits the specified time and then verifies zero voltage with a rated meter while wearing insulated gloves. Assuming safety, testing with a bare hand, or spraying water is dangerous and does not follow the procedure. Every step protects against residual energy.

19. A — Toe equals the rear measurement minus the front measurement. With the front at 1,810 mm and the rear at 1,812 mm, the tires are closer together at the front by 2 mm, which is toe-in. Reversing the subtraction gives toe-out, 1,811 is just an average, and zero ignores the 2 mm difference.

20. C — The limit for a Type 30 clamp-type chamber is 51 mm, so 57 mm is out of adjustment. An automatic adjuster should hold stroke without help, so a technician finds why it failed and repairs or replaces it. Manual cranking hides the cause, the limit is not relaxed for loads, and the chamber itself is not the problem.

21. B — A clutch brake slows the input shaft when the pedal is fully depressed so the first gear can engage without grinding from a stop. A worn or missing clutch brake leaves the shaft spinning. A transmission cooler hose, axle breather, or front wheel bearing cannot cause grinding at engagement. Checking it first targets the true source.

22. A — Excessive AC ripple on the charging output means the alternator is leaking AC through a failed rectifier diode, which also lowers charging output. A starter drive gear does not affect AC ripple, a weak cell lowers battery voltage but does not add ripple, and a loose fan belt has no electrical link to the alternator waveform.

23. D — A reading of minus 22 means the glycol concentration is below the roughly 50 percent needed for minus 37, so concentrate must replace some of the diluted mix. Adding water lowers protection further. Additive packages protect against corrosion but not freezing, and Canadian winters can demand far more than minus 20.

24. B — Each leg carries half of the 1,200 kg load, 600 kg, but the steep-looking 60-degree sling angle still multiplies tension by one divided by $\sin 60$, about 1.155, giving 693 kg per leg. Using 600 kg ignores the angle, 1,200 kg assumes one leg carries everything, and 346 kg applies the wrong trigonometric factor.

25. D — A coil that stays iced stops airflow and heat transfer, so the box warms while the unit runs. This points to a defrost system fault, such as a failed sensor or heaters. Washer fluid, a weak tractor battery, and a bent landing gear leg are unrelated to the trailer's refrigeration system.

26. C — A whining pump and milky fluid point to air or water in the oil, usually from a suction leak, a low level, or water ingress, which causes cavitation and damages the pump. Overfilling does not make the fluid milky, a short return line is not a cause, and gauge units do not change pump noise.

27. A — A vehicle that tracks straight but pulls under braking has unequal braking between sides, so brake balance, stroke, and lining condition are checked first. Seat suspension, oil level, and landing gear have no relation to side-to-side braking differences, so they are not logical places to start for this symptom. Equal stroke and lining checks find the cause quickly.

28. C — A drop above specification on the ground side shows excess resistance in the cable or connections, so they are cleaned, tightened, and re-tested. A weak battery would show low voltage rather than a drop across a cable, a starter fault would show elsewhere in the test, and idle speed does not change cranking resistance.

29. B — Spring brakes hold the vehicle by compressed power springs, so with no air they can be released mechanically by caging each chamber with its caging bolt. Cutting lines does nothing to the springs, prying pushrods is unsafe and ineffective, and heating a chamber could cause the spring to release violently or fail dangerously.

30. D — Range shifts are made by an air-operated cylinder, so a transmission stuck in low range commonly has an air supply or control problem at the range valve or cylinder. Rear axle oil, coolant concentration, and clutch pedal stroke do not control the range mechanism, so they would not explain a failure to leave low range.

31. A — Low hot-idle pressure that persists with a verified gauge, correct level, and proper viscosity suggests excess bearing clearance, because oil escapes faster than the pump can supply it at low speed. A level correction, fan cycling, or engine brake effects point to external causes rather than a wear problem inside the engine.

32. B — The receiver-drier or accumulator holds desiccant that absorbs moisture, and it is saturated when the system is opened for a major repair, so it is replaced with the compressor. The cabin filter, engine thermostat, and radiator cap are not part of the refrigerant circuit and cannot protect the system from moisture.

33. A — In a normally open relay, terminals 30 and 87 should not connect until the coil is energized. Continuity at rest means the contacts are stuck closed, so the relay needs to be replaced. An open coil would show no continuity across 85 and 86, and a coil resistance value does not change contact behaviour.

34. C — Feathered tire wear, where ribs are worn at an angle and feel sharp in one direction, is the typical result of incorrect toe that drags the tire sideways. Excess caster affects steering feel and return, oil pressure is an engine matter, and an air dryer cartridge has nothing to do with tire wear patterns.

35. D — Air from a leakage tester heard at the tailpipe is passing the exhaust valve, which opens to the exhaust manifold. Intake valve leakage is heard at the intake or air cleaner, ring leakage appears at the crankcase breather or dipstick tube, and a head gasket leak shows as bubbles in the coolant or air in the adjacent cylinder.

36. C — An erratic wheel speed signal usually comes from physical causes: a sensor that is loose or too far from the tone ring, a damaged tone ring, or wiring and connector problems. Checking these first is quick and targeted. Chamber stroke, compressor discharge lines, and battery electrolyte are unrelated to the ABS sensor signal.

37. A — Automatic transmission fluid level is read after warming it up, with the vehicle level and the engine running in neutral or the specified position, using the correct hot or cold band. A cold, engine-off reading is misleading, drive with the brakes released is unsafe, and a tilted vehicle gives a false reading.

38. B — Current equals power divided by voltage, so 60 watts divided by 12 volts gives 5 amps. Dividing voltage by power gives 0.2, multiplying them yields 720, and 12 amps would correspond to a 144-watt load at that voltage. The result sizes the wire and fuse so they can carry the lamp safely.

39. D — Water entering the cab with an intact door seal commonly comes through plugged cowl drains, a failed windshield seal, or blocked door drain holes, so these are checked next. The reefer fuel cap, brake drum seal, and oil dipstick tube are in different locations and cannot lead water into the cab.

40. D — Cupping appears as repeating low spots where a tire bounces on the road, from worn shocks, imbalance, or loose suspension parts. Steering gear play, coolant level, and clutch pedal adjustment have no link to tire bounce, so they are not candidates for cupping on a trailer tire. Balancing the wheel and replacing worn shocks stops the pattern.

41. A — SCR systems need DEF at 32.5 percent urea, and a lower reading means dilution that can reduce NOx conversion and trigger derate faults. The tank should be drained and refilled with certified DEF. A broad range is not accepted, powder cannot be mixed in the field, and a working heater does not correct concentration.

42. C — WHMIS 2015 requires a workplace label when a hazardous product is transferred into another container. It must give the product identifier and safe-handling information and refer to the safety data sheet. A handwritten name is incomplete, copying a full supplier label is not required, and a bottle used only briefly by one person is still covered.

43. B — A sliding tandem is held by locking pins that must pass fully through the rail holes and be locked, and unengaged pins can let the tandem shift under braking. The air conditioning belt, coolant freeze point, and marker lamp colour do not affect the tandem position or stability. Always confirm the pins before moving.

44. B — Cold hydraulic oil is thicker and creates a higher pressure drop across the filter, so a bypass indicator can show red until the oil warms. Rechecking after warm-up tells whether the filter is truly restricted. A reading that clears when warm does not show a failed filter, lost pump pressure, or overfilling.

45. D — A single drum that stays hot and drags points to brake hardware that is not fully releasing, such as a seized S-cam, sticky bushings, or a slack adjuster that stays applied. Low tire pressure creates tire heat and not brake drag. An oil-soaked lining would slip and grab, and a weak spring would not cause drag.

46. C — An automated manual transmission relies on a learned clutch touch point, so after a clutch replacement the calibration must be run with the scan tool. Without it, engagement is harsh. Changing idle speed, adding oil, or disconnecting the batteries does not teach the controller the new clutch position. Skipping calibration leaves the learned values wrong.

47. A — A fuse protects the wiring, and one that repeatedly blows shows a short or overload that must be found and fixed. A larger fuse would let the wire overheat before it opens, and an oversized breaker or bypass wire removes the protection entirely. The correct repair is to find the fault and use the specified fuse.

48. C — With full, good-quality DEF, a low efficiency fault after sitting points to crystallized urea restricting the doser or lines, so inspecting and testing the doser is logical. A soot-loaded filter has its own fault codes, boost has little direct effect on conversion rate, and coolant flushing is unrelated to the injection path.

49. B — Evacuating with a vacuum pump lowers the pressure so moisture boils off and air is removed, and holding vacuum shows the system has no major leaks. Shop air adds moisture, venting refrigerant is illegal and ineffective, and leaving the system open overnight lets in more moist air. Skipping evacuation leaves moisture that corrodes the system.

50. D — When one side of an air suspension sits low with the height control linkage intact, the cause is usually a leaking air spring or a valve or air line problem on that side. The reefer fuel cap, landing gear foot, and gladhand seals cannot change the trailer's ride height. Check the spring first.

51. A — An insulation resistance fault means the isolation between the high-voltage system and the chassis has fallen, creating a shock hazard, so the system is isolated and traced. A loose 12-volt terminal, low refrigerant, or slow wipers are not related to high-voltage isolation. Isolation faults can energize the chassis, so no one should touch the truck until verified safe.

52. A — A tractor protection valve is designed to close when trailer supply pressure drops, keeping the tractor's air in the tractor circuits even if the trailer line is broken. It should vent briefly and then seal. A steady full flow shows the valve is not closing, and the tractor service brakes do not apply by themselves in this test.

53. B — A rhythmic chirp tied to driveshaft speed is a classic sign of a dry or worn universal joint, where the needle bearings lack lubrication. The noise follows driveshaft rotation, not the engine. A cracked case, battery, or turbocharger shaft are unrelated to a noise that varies with vehicle speed. Greasing or replacing the joint ends the noise.

54. D — A repair in an exposed harness must resist vibration, water, and salt, so a crimped or soldered splice sealed with adhesive-lined heat shrink is best. Twisted joints with tape loosen and corrode,

scotch-lock taps damage strands and leak, and wire nuts are not designed for vibration or moisture exposure on a vehicle.

55. C — Water in fuel will freeze and damage injectors, so the separator must be drained, filters replaced, and the contamination source found, such as a bad supplier fuel or tank condensation. Alcohol additives do not remove the water, bleeding alone leaves it in the system, and replacing injectors treats a possible result rather than the cause.

56. C — A cracked main leaf compromises axle location and load capacity, so the pack should be replaced, and replacing both sides keeps ride height and spring rate balanced. Welding hardened spring steel weakens it, removing the main leaf leaves the pack underrated, and a strap does not restore strength. Matched springs keep the axle square.

57. B — A healthy CAN network has two 120-ohm terminating resistors in parallel, so the reading at the connector with power off is about 60 ohms. A reading of 120 shows only one resistor in the circuit, meaning the other is open or missing. A short would read near zero, and a third resistor would reduce the reading.

58. A — A cracked frame rail is a structural defect, and an inspector must record it and fail the unit until a proper repair is made. Welding over a crack or drilling a stop hole without an approved repair can create new stress points. Passing the unit with advice to the driver leaves an unsafe vehicle on the road.

59. D — Light leaks seen from inside a dark trailer on a bright day show gaps in the roof, door, and panel seals, giving a quick, reliable way to find openings that also let water in. Tapping with a hammer risks damage, interior paint does not reveal leaks, and smelling for moisture is not a measurable test.

60. B — A cylinder that drifts with fluid passing the piston seal needs new piston seals, and the bore and rod are inspected for scoring that could ruin the new seals. Tightening a gland nut only affects the external rod seal, a bigger pump does not stop an internal leak, and thicker oil does not repair a worn seal.

61. D — Compressor oil carryover with carbon in the discharge line is often caused by an intake restriction, which creates a partial vacuum that pulls oil past the piston rings, along with high temperature. A pedal valve, thermostat, or gladhand seal does not feed oil into the wet tank, so the inlet is checked before replacing the compressor.

62. A — A cracked and loose centre bearing allows the shaft to run out of alignment and vibrate, so it must be replaced and the shaft alignment and balance verified. Sealant cannot restore bearing support, overtightening bolts damages parts, and removing a support bearing on a long driveline would create dangerous whip.

63. C — A restriction indicator measures actual air flow resistance, which can come from a blocked pre-cleaner, collapsed hose, or a clogged inner element, not just a dirty-looking surface. Verifying the system and gauge setting avoids blind replacement. Ignoring or resetting the gauge risks starving the engine, and the turbocharger is not the cause.

64. C — A properly locked fifth wheel holds the kingpin during a gentle tug test. If it slips out, the jaws or lock mechanism are worn, damaged, or out of adjustment and the unit is unsafe to use. Brake adjustment or engine power do not govern whether the lock holds, and a kingpin is never meant to slide out.

65. D — A reading pinned at minus 40 with a voltage-high code means the module sees the maximum reference voltage, which happens when the circuit is open or the connector is unplugged. A short to ground would give a high temperature reading, and a cold thermostat or low coolant would change the measured temperature without producing a circuit fault.

66. A — Turbocharger shaft play is normally a few hundredths of a millimetre, so 1.2 mm of axial play means worn bearings, which allow oil past seals as blue-grey smoke and create a rattle. A thermostat does not cause smoke, one millimetre is far beyond normal, and injector faults do not produce this noise.

67. B — A dual air system divides service brakes into primary and secondary circuits, and protection valves keep one circuit's failure from draining the other. The front circuit holding pressure shows this works, so the driver still has braking. It does not show both circuits failed, a trailer valve trip, or the compressor switching circuits.

68. B — The axle ratio equals ring gear teeth divided by pinion teeth, so 41 divided by 11 gives 3.727, which rounds to 3.73 to 1. Dividing the other way yields 0.27, and numbers such as 3.37 or 4.10 come from reversing digits or from using a different tooth count than the one given.

69. D — A cab air suspension uses air springs and height valves to hold level, so a low front after air-up points to a leaking spring or faulty valve. A starter relay, engine mount, or fifth wheel plate have nothing to do with cab ride height and cannot explain a low cab front.

70. C — The evaporator removes moisture from the air, and the condensation leaves through a drain tube, so a blocked tube causes water to back up and enter the cab. Clearing or replacing it fixes the problem. More refrigerant, a new compressor, or blocking the air intake do not drain the condensation.

71. A — Lamps that glow dimly or light up with other circuits are classic signs of a high-resistance ground, because current finds backfeed paths through other lamps. Checking and repairing the trailer ground cures the symptoms. A weak battery would dim all lamps, an alternator fault would show on the tractor, and a pedal switch would not light a turn lamp.

72. D — A binding landing gear usually has bent legs, dry or damaged gears, or misaligned parts, so it is inspected and corrected before use. Forcing the crank can strip gears, landing gear carries the trailer load when uncoupled so it is safety related, and removing lubricant increases friction and wear. Inspect before the trailer is next coupled.

73. A — Rail pressure that is normal at idle but falls at high load means supply cannot keep pace with demand, which points to a restricted supply, a clogged filter, or a weak high-pressure pump. A coolant sensor affects enrichment but not pump capacity, an exhaust leak affects boost, and starter wear affects cranking only.

74. B — The trailer supply valve pops out and applies the spring brakes when supply pressure falls below its set value, which commonly happens with a leak in the supply line or fitting. Wheel speed faults light the ABS lamp without locking brakes, an open protection valve would let air flow, and crossed lines cause different symptoms.

75. C — Gear noise that appears only on the coast side points to the contact pattern on the coast face of the ring and pinion teeth and to pinion bearing preload, which must be checked and corrected. Stud torque, a clutch release bearing, or an air dryer do not cause a coast-only howl from the axle.

76. C — A metric micrometer adds the sleeve reading to the thimble reading: 25.5 mm plus 0.37 mm equals 25.87 mm. Subtracting the thimble value gives 25.13, while 25.37 comes from dropping the half-millimetre. A reading of 26.37 adds an extra 0.5 mm, and 25.50 ignores the thimble entirely, so only 25.87 reflects both scales.

77. D — High discharge pressure on a hot day with poor cooling often means heat cannot leave the system, so a dirty or blocked condenser coil or a failed condenser fan is checked first. Landing gear oil, a tractor turbocharger line, and reflective tape do not affect the refrigerant circuit. Clean the coil before blaming refrigerant.

78. A — A hydraulic hose must have slack for movement and pressure change, a gentle bend radius, no twist, and protection from heat and abrasion. Pulling it tight, twisting it, or running it next to the exhaust shortens its life and can cause it to burst under pressure. Correct routing prevents leaks and chafing at the fitting.

79. B — A load test at half the CCA rating for 15 seconds should keep the voltage at or above about 9.6 volts at normal temperature. A reading of 8.9 volts means the battery cannot hold up under load, so it fails. A longer test or a load at full rating does not change the standard for this test.

80. C — Many tire pressure monitoring systems must be told which sensor belongs to which wheel position, so a new or moved sensor needs to be relearned using the scan tool or the system's procedure. Extra pressure, bearing adjustment, and a new brake drum do not affect a sensor registration problem. Registering it clears the missing-reading display.

81. D — Milky oil together with a pressure loss that cannot be seen externally shows coolant passing into the lubrication system, usually through a failed oil cooler core, cracked head, or gasket. Hose clamps, radiator cap seals, and filter bases leak externally or into the atmosphere and do not contaminate the oil.

82. B — Charging voltage well above about 14.5 volts with no load and sulphur smell from the batteries shows overcharging, usually from a defective regulator or a faulty sense wire. The charging system must be repaired to prevent boiling the electrolyte. A weak battery would draw more current but not overvoltage, and belt or starter ground problems would lower output.

83. A — Even pad wear depends on a caliper that slides freely on its guide pins. If a pin or boot seizes, one pad remains in contact and wears faster, which matches uneven inboard and outboard wear. A

diaphragm leak elsewhere, engine coolant level, or lug nut torque does not change pad wear within one caliper.

84. D — A differential lock forces both wheels to turn together, which is useful for traction on slippery surfaces at low speed, but it should be released once traction returns because it causes tire scrub on dry pavement. Using it constantly or at highway speed harms components and handling, and load has no bearing on proper use.

85. B — Regenerative braking uses the electric motor as a generator to slow the vehicle, so the friction brakes do less work and their pads wear more slowly. Pad weight alone does not explain it, hybrids still use friction brakes at low speed and in hard stops, and a fluid property does not extend pad life.

86. A — New wheel installations settle as paint and surfaces compress, so nuts are retorqued after a short interval of about 80 to 160 km. Waiting ten times longer allows loosening, never retorquing ignores settling, and waiting for noise means the nuts may already be dangerously loose. Checking again after a short drive is a basic shop habit.

87. C — Lash is correct when the specified feeler gauge passes with a light drag, which shows the clearance matches the specification. A free slide means the gap is too large, which causes noise and reduced valve lift. Opening it more would worsen the problem, and rocker replacement is not needed for a simple adjustment error.

88. D — An electronic leak detector or UV dye lets a technician locate small refrigerant leaks accurately, and these are the standard methods for slow leaks. Water on lines does not show leaks through the insulation, opening the system releases refrigerant, and listening for noise cannot find a slow leak. Dye shows the exact leak point under a lamp.

89. A — A single click with bright headlights suggests the solenoid pulls in but current does not reach the starter, so a voltage drop test across the solenoid contacts and cables finds the resistance. A key cylinder does not click the solenoid, oil grade matters little to a no-crank, and bright headlights show the batteries are charged.

90. B — Pushrod strokes on one axle should be close, and a large difference indicates unbalanced braking caused by binding hardware, an adjuster fault, or lining differences. The short stroke side may be binding and overheated. Strokes are not naturally different, a diaphragm leak does not follow from stroke length, and engine bearings are not involved.

91. C — An axle breather lets housing pressure escape as heat expands the oil and air. If it is plugged, pressure builds and can push oil past the wheel seal onto the brakes. The breather and seal should both be replaced. A plugged breather does not cool the oil or thicken it, and it is not a cosmetic part.

92. D — FA-4 is a lower-viscosity oil designed for specific newer engines, and it is not backward compatible with all older ones. Approval must come from the engine manufacturer. Assuming newer means universal, blending grades to adjust economy, or choosing by idle time all ignore the manufacturer's specification, which governs oil selection.

93. C — The upper coupler carries the trailer's connection to the tractor, so a bent plate, a worn kingpin, and weld cracks are serious defects, and the trailer must be removed from service until it is properly repaired. Deferring, welding over cracks, or grinding the kingpin do not restore strength. This protects the driver and everyone sharing the road.

94. A — A relief valve protects the system, so it is set with a pressure gauge fitted and the circuit run to its limit, then adjusted to the specified pressure. Turning it fully in or setting it by sound ignores the limit, and plugging it removes the protection and can cause hose, pump, or cylinder failure.

95. B — A light film of oil on the gasket lets it seal evenly, and prefilling reduces dry-start time. The filter is then turned the specified amount after contact. Overtightening with a strap wrench can crush the gasket, sealant can enter the oil passages, and fuel in a lube filter contaminates the oil and risks engine damage.

96. D — A bulge and a cut through the sidewall cords show structural failure in the casing, and sidewall damage is not repairable, so the tire must be scrapped. A patch cannot restore the cord strength, raising pressure increases the risk of a blowout, and the trailer position still carries heavy loads at speed.

97. A — A bonded windshield is structural and affects airbag performance and roof strength, so the specified urethane and primers are used and the drive-away time is observed. Silicone sealant, tape, or corner glue cannot provide the required strength, and returning the vehicle too early risks the glass shifting. Following the adhesive maker's cure time protects the occupants.

98. B — A sender measuring open at every float position cannot send a signal, so the sender or its wiring has failed. The repair is verified at several fuel levels. Replacing the cluster would not cure an open sender, adding fuel would only mask the problem, and an engine module reflash does not affect an open sender circuit.

99. C — A relay valve controls how fast brake chambers apply and release, and a restricted exhaust or sticky piston causes slow release. Cleaning or replacing it addresses the cause. Compressor output, tire tread, and governor cut-out settings do not change the way the relay valve exhausts air from the chambers during release.

100. A — A retarder works by moving fluid against a rotor, and the control valve regulates how much, so with a correct fluid level the supply and control signal to the valve are the next checks. Front bearings, idle speed, and the axle ratio have no direct effect on retarder torque. Test the signal before replacing parts.

101. C — A hiss under boost and rapid decay during a pressure test show a leak in the charge air path, which wastes boost and reduces power. A leaking cooler or split hose is the likely repair. The air filter does not leak boost, raising wastegate settings could damage the engine, and valvetrain wear is not detected by a boost leak test.

102. D — The highest blower speed typically bypasses the resistors and connects directly to power, so working only at high means the resistor pack or speed control module has failed on the lower circuits. A

clogged filter reduces airflow at every speed, and the compressor clutch or engine thermostat are not part of the blower speed circuit.

103. B — A trailer that tracks to one side with uneven tire wear has tandem axles that are not square to the trailer centreline, so axle alignment is measured and corrected. The air dryer, engine oil grade, and reefer fan speed do not influence how a trailer tracks behind the tractor. Correcting squareness also restores even tire wear.

104. C — A plugged crankcase ventilation filter traps blow-by gases, which raises internal pressure and pushes oil past rear main seals, valve cover gaskets, and dipstick tubes. Pressure does not seal rings better, cool the oil, or clean the manifold. Replacing the filter or serviced separator relieves the pressure and often stops the leaks.

105. A — Heater hoses where one is hot and the other cold show that coolant is not flowing through the core, caused by a plugged core or a closed control valve. Refrigerant charge, the air conditioning compressor clutch, and a cabin filter housing have no effect on coolant flow in the heating circuit.

106. B — A pressure that stalls well below cut-out shows the compressor cannot keep ahead of the system, usually from a worn compressor, a restricted discharge, or a system leak large enough to match its output. A tire sensor or battery on another tractor has no link to this test, and a mislabeled cluster would still show a normal climb.

107. D — High iron and copper with particles on the magnet signal gear, bearing, or bushing wear inside the transmission, so it should be inspected and repaired before failure. Dismissing it ignores clear wear evidence, an additive does not stop wear, and the clutch is outside the transmission lubrication system that the sample came from.

108. C — A device wired to a continuous feed can drain batteries when the vehicle is parked, so rewiring it to an ignition-switched or managed power circuit and re-measuring the draw solves the cause. Removing the device throws away its function, a bigger battery only delays the failure, and a weekly disconnect is not a solution.

109. A — Frame rails are heat-treated, and drilling flanges or welding in the wrong places can create cracks, so technicians use existing holes or bolted brackets that follow the manufacturer's rules. Random flange holes, heavy welds on the top flange, and torch-cut slots all create stress concentrations that can lead to failure.

110. B — Welding current can travel through wiring and damage control modules, so the battery and module connectors are disconnected and the ground clamp is placed close to the weld to keep the current path short. Leaving power on, grounding far away, or turning the ignition on all invite current through bearings and sensitive circuits.

111. C — A refrigeration engine runs when the trailer is parked and loading, so its wear follows operating hours, which the unit's hour meter records, rather than distance travelled. Distance does not reflect idle running time, calendar time ignores usage, and most reefers have their own fuel tank separate from the tractor.

112. D — An accumulator stores energy that can remain after the pump is off, so the stored pressure is relieved using the manufacturer's procedure and checked at zero before any line is opened. Opening a fitting to test is dangerous, running the pump does not discharge it, and heating a pressure vessel is hazardous.

113. B — A compression brake works by opening exhaust valves near top dead centre using engine oil pressure through solenoids and slave pistons. Weak action on one bank commonly comes from low oil supply or incorrect brake lash, so these are checked first. The turbocharger, idle speed, and coolant flushing do not control brake valve action.

114. A — A silicon diode conducts in one direction with a forward drop of about 0.5 to 0.7 volts and blocks in the other. A reading of zero both ways means a shorted diode, open both ways means an open diode, and a 12-volt reading is not a normal result in this test mode.

115. D — An ABS module without power cannot work, so the supply path from the tractor through the connector, fuse, and trailer wiring is traced first. Brake chambers do not power the module, speed sensors are inputs and do not supply the module, and an engine module reset has no effect on the trailer's electrical supply.

116. D — A self-adjusting clutch has a wear indicator that moves as the disc wears, so a technician checks and records it at each service and plans replacement when it reaches the worn zone. These clutches adjust themselves, so no turning is needed. Removing or ignoring the indicator hides valuable wear information.

117. A — Excessive vertical play on a steer axle king pin shows worn bushings or a worn thrust bearing, which affect steering control and tire wear, so they must be replaced. Tire pressure, power steering fluid, and brake stroke have no bearing on the vertical movement measured at the king pin. Measuring with a dial indicator confirms wear.

118. B — High-voltage cables in hybrid and electric vehicles are covered in orange insulation and usually run in marked conduits or shields, which warns technicians not to touch or cut them without following the procedure. Red, blue, or black wiring does not signal high voltage, and the 12-volt harness uses ordinary colours.

119. C — A coolant smell inside the cab with a wet carpet points to a heater core or its hoses, which sit inside the HVAC housing. A water pump seal, head gasket, or radiator tank would leak externally in the engine bay or into the exhaust, not into the passenger footwell. Pressure testing the core confirms it.

120. D — With good power and ground at the connector, the fault lies inside the lamp, and most LED units are sealed assemblies that are replaced as one piece. They have no filament to change, a larger fuse does not help a lamp that receives full voltage, and ambient light has nothing to do with LED function in a lamp.

121. A — A seat belt with frayed webbing or a latch that does not hold cannot protect the occupant, and restraint parts are not repairable, so the assembly is replaced. Stitching webbing, taping a latch, or

advising loose wear all leave a restraint that would fail in a collision. Replacing the whole belt assembly is the only acceptable repair.

122. B — Frozen drain valves come from moisture in the air system, so the dryer, its heater, and the purge cycle are checked, and tanks are drained to remove water. Adding methanol is a poor substitute for dryer function, fast idling does not remove moisture, and removing a drain valve would leave the tank without protection.

123. D — Burnt fluid after high load shows the transmission has been overheated, so the cooler, lines, and level are checked, and fluid and filters are changed with inspection for damage. Mixing fluid types can harm friction materials, a changed schedule does not repair damage, and an engine clutch does not apply to this automatic.

124. C — A wheel seal must go in square using the correct driver, with its lip toward the oil, and clean, undamaged surfaces. Hitting with a punch distorts it, sealant on the lip prevents proper contact, and a seal facing the wrong direction allows oil to escape or lets dirt in and fails quickly.

125. C — Long idling keeps the engine cool, causes fuel dilution and soot loading, and strains the aftertreatment, so shorter oil intervals and monitoring are wise. Idle hours are not less wearing, and removing a thermostat worsens warm-up. A 70 percent glycol mix reduces heat transfer and does not suit this problem.

126. A — Rapid clutch cycling with low-side pressure dropping to near zero indicates the system is low on refrigerant and is tripping the low-pressure cut-out switch. An overcharge would show high-side pressure, and a new cabin filter or stuck thermostat have no link to the compressor clutch cycling. Adding refrigerant after leak repair restores normal cycling.

127. B — A variable-reluctance speed sensor generates its own AC signal when the tone ring teeth pass, so no signal while the wheel turns means a bad sensor, an excessive air gap, or a damaged tone ring. The signal does not depend on battery voltage, coolant temperature, or alternator output, so those distractors cannot explain the lack of voltage.

128. A — Good mentoring corrects an unsafe act immediately, because a rolling trailer can cause serious injury. Stopping the job, explaining the hazard, demonstrating the procedure, and observing a repeat teaches the habit. Fixing it silently teaches nothing, assigning reading removes the apprentice from learning, and waiting for a review leaves the danger in place.

129. B — With good power and ground, the module has detected another fault, and its fault code points to the sensor, wiring, or valve involved. Tires do not clear an ABS code, disconnecting a lamp hides the warning, and raising suspension pressure has no link to ABS faults and could damage the air springs.

130. D — Dark, burnt-smelling oil with heavy particles shows overheating and wear, so the cause should be found, the system flushed, and the fluid and filters replaced. Topping up or using a conditioner leaves contaminated oil in the system, and removing the filters would let particles damage pumps and valves quickly. Cleaning the system protects the new fluid.

131. C — Fine heat checks can often be machined away within the drum's limits, but a crack that runs to the open edge weakens the drum and can lead to failure, so replacement is required. Machining may not remove it, welding changes the metal and balance, and paint hides the defect without restoring strength.

132. C — Oil on the clutch disc comes from the engine rear main seal or the transmission input shaft seal, since both sit at the clutch housing. Stop the oil leak first, or the new clutch fails. The air compressor line, washer reservoir, and coolant cap are not located at the clutch and do not feed oil there.

133. A — Unequal tire pressures change rolling resistance and can make a vehicle pull, so correcting pressures to specification and re-testing is the simplest first step. Large caster changes or a steering gear replacement are premature, and swapping tires without correcting pressure leaves the cause in place. Always eliminate the simple cause first.

134. D — An intake heater that stays cold means the starting aid is not working, so the logical test is power at the relay and element, then the relay control signal from the module. Replacing injectors is premature, repeated starting fluid can cause damaging detonation near a heater, and heavier oil makes cranking slower at that temperature.

135. B — A module with no communication often has no power or ground, so fuses, ignition feed, and grounds are checked at the connector before anything else. Reprogramming needs a working module, replacing a good module wastes money, and disconnecting the batteries does not repair a missing supply, though it can erase stored data.