

PRACTICE EXAM 21: 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 technician connects a new battery in parallel with an old, weak one in a 12-volt truck. What is the likely effect?
 - A. The two share the load equally and double the cranking amps with no downside
 - B. The system voltage rises to 24 volts across both battery terminals together
 - C. The weaker battery drags the new one down and shortens the life of both
 - D. The weaker battery recharges the stronger one until the pair is balanced

2. A diesel engine has a new head gasket but still shows white exhaust smoke with a sweet smell and a slowly falling coolant level. What is the most likely cause?
 - A. Coolant is still leaking into a cylinder past the gasket or head
 - B. Unburned fuel is passing through a stuck-open injector on one cylinder
 - C. The thermostat is stuck closed and the engine is running too hot
 - D. Intake air restriction is causing a rich mixture at idle only

3. With the truck on the ground and the engine off, a technician rocks the steering wheel and sees excessive free play. Which components are checked first?
 - A. The air compressor discharge line and the governor unloader port
 - B. Tie-rod ends, drag link, pitman arm joints, and gear lash

- C. The fuel injection pump timing and the injector spray pattern
- D. The drive axle carrier bearings and the pinion seal

4. Heavy carbon buildup is found inside the compressor discharge line near the compressor. What is the most likely cause?

- A. Excess oil passing worn compressor rings or a restricted air intake
- B. Water entering the system from a failed desiccant cartridge in the dryer
- C. A governor cut-in pressure set too low on the dash gauge
- D. A leaking trailer supply valve venting air at the rear

5. A hydraulic clutch pedal slowly sinks to the floor under steady foot pressure, with no external fluid leak. Which cause is most likely?

- A. A worn pilot bearing in the flywheel
- B. Internal leakage past the master cylinder piston seals
- C. A glazed flywheel face under the clutch disc
- D. A bent input shaft in the transmission

6. Before a technician removes a driveshaft from a PTO-equipped truck, which step best ensures the shaft cannot turn unexpectedly?

- A. Shut off the engine and place the shifter in neutral, then work while the transmission is not turning
- B. Leave the engine idling with the PTO switch off so the air system keeps the clutch released
- C. Block the front wheels and ask a coworker to stand beside the cab in case the shaft moves
- D. Shut off the engine, switch the PTO off, remove the key, lock and tag, then verify

7. A trailer's ABS lamp stays on after coupling. Which check is appropriate first?

- A. Replace the trailer brake chambers and recheck the lamp
- B. Retorque the wheel nuts on the trailer and the hub caps

- C. Confirm ABS power and ground at the connector, then read the fault codes
- D. Drain the trailer reservoirs and then refill them with fresh compressor oil

8. A hydraulic pump produces a high-pitched whine and the fluid is foamy. What is the most likely cause?

- A. A relief valve that is set too low in the circuit
- B. A cylinder rod wiper that has become badly worn
- C. A return filter with a brand new element installed
- D. A restricted suction line or strainer, or an air leak

9. A technician measures parasitic draw on a truck using an inline ammeter. What is the correct technique?

- A. Connect the ammeter across the battery posts while the engine is running hard
- B. Measure the draw immediately after disconnecting the battery cable
- C. Let the modules sleep, then read current with the meter in series and doors closed
- D. Use an ohmmeter across the battery terminals with the key off

10. A cylinder leakage test on a diesel shows high leakage, and air is heard escaping at the oil fill opening. Which condition is indicated?

- A. A burned exhaust valve leaking air out through the exhaust pipe
- B. Worn piston rings or cylinder liner letting air past the piston into the crankcase
- C. A leaking intake valve seat blowing air into the intake
- D. A blown head gasket leaking air into the cooling system

11. A cab heater blows cool air although both heater hoses are hot to touch. Which cause is most likely?

- A. A stuck blend door that sends air around the heater core instead of through it
- B. A thermostat stuck open in the engine cooling circuit

- C. A radiator cap that releases coolant at low pressure
- D. A weak water pump impeller slipping badly on its drive shaft

12. A truck wanders on the highway and needs constant steering corrections, even though the tires are evenly inflated and the linkage ends are tight. Which fault fits best?

- A. Worn steering gear lash or too little positive caster
- B. Over-inflated tires on the rear drive axle pair
- C. Worn front brake linings on the steer axle
- D. A leaking steering gear input shaft seal

13. An air dryer blows air from its exhaust port continuously while the compressor is loaded. Which fault fits best?

- A. A clogged cabin air filter restricting the dash blower
- B. A cracked brake drum causing the brakes to drag
- C. A low coolant level causing compressor overheating
- D. A leaking purge valve seat or reservoir check valve

14. Why is the pilot bearing normally replaced during a clutch job?

- A. It carries the driveline load from the flywheel to the output shaft
- B. It seals the clutch housing against oil leaks from the crankshaft
- C. It holds the input shaft in line, and wear causes noise
- D. It operates the release fork when the pedal is pressed

15. A truck with an air-suspended cab sits low on one side after parking overnight. What is the most likely cause?

- A. A badly worn universal joint in the driveshaft and slip yoke assembly
- B. A leaking cab air spring or leveling valve on the low side of the cab

- C. A restricted fuel filter on the engine fuel supply side
- D. A weak battery on the passenger side of the frame

16. The charge lamp is on and battery voltage is 12.1 volts at 1,500 rpm. The belt is tight and in good condition. What is the best next check?

- A. Alternator output at the battery, then the output wire and fuse link for opens
- B. Replace the battery without any further testing or load check
- C. Tighten the engine ground strap only and leave the alternator alone in place
- D. Check engine oil pressure at idle with a mechanical gauge

17. After torquing a main bearing cap with Plastigage between the bearing and journal, the crushed strip is much wider at one end. What does that indicate?

- A. The bearing clearance is larger at the wide end of the strip
- B. The cap was overtightened evenly, so the bearing must be replaced again
- C. The bearing oil hole is blocked, so the strip could not crush normally
- D. The journal is tapered, since clearance is smaller where the strip is wider

18. After the service disconnect on a hybrid truck is removed, why must the technician wait the specified time before touching high-voltage connectors?

- A. The 12-volt battery must cool down first
- B. The coolant must reach operating temperature
- C. Inverter capacitors must discharge first
- D. The transmission must be in neutral

19. Steering is heavy only when the wheels are turned to full lock. Which condition fits best?

- A. Low relief pressure in the pump or gear
- B. An under-inflated air brake chamber on the front steer axle

- C. A leaking radiator hose near the water pump inlet
- D. A worn clutch release bearing inside the bellhousing area

20. Air pressure falls quickly after the red trailer supply valve is pushed in, but holds with the valve pulled out. Where should the technician look first?

- A. The tractor parking brake chambers and their release hoses
- B. The trailer air supply line, gladhand seals, and trailer valves
- C. The tractor front brake chamber diaphragms and clamp rings
- D. The compressor governor unloader port and the dryer purge valve

21. A manual transmission jumps out of fifth gear under load. Which condition is most likely?

- A. Excess oil level in the transmission case
- B. A glazed clutch disc surface and a weak clutch brake
- C. A weak air supply to the clutch brake and range cylinder
- D. A worn shift fork, detent, or engagement teeth

22. Cranking is slow, and the voltage drop across the positive battery cable measures 0.9 volts during cranking. What is the conclusion?

- A. The cable is normal because cranking always causes about one volt of drop
- B. There is excessive resistance in the cable or its connections that must be repaired
- C. The starter motor is overheated and should be replaced soon
- D. The battery is overcharged and needs to be discharged first

23. After installing wet cylinder liners and before installing the cylinder head, which measurement is required?

- A. Piston skirt clearance, measured with a feeler gauge in the bore
- B. Crankshaft endplay, measured with a pry bar and indicator

- C. Liner protrusion above the block deck, measured with a dial indicator
- D. Camshaft lobe lift, measured with the cam installed in the block

24. A shop fills a small workplace container from a bulk drum of parts-washer solvent. What must the container carry?

- A. A handwritten note of the date it was filled, since the supplier label stays on the original drum only
- B. A workplace label with the product identifier and safe handling information, plus ready access to the safety data sheet
- C. A hazard sticker for fire only, because flammability is the single hazard that requires labelling under WHMIS
- D. No label, provided the same technician who filled it is the only person who will ever use it

25. A tandem trailer tracks at a slight angle behind the tractor, which is known as dog tracking. Which cause fits?

- A. Bent or misaligned axles that are not square
- B. Low air pressure in the trailer suspension air reservoir tank
- C. A worn fifth wheel lock jaw on the tractor
- D. An old trailer marker light bulb at the rear

26. How is internal leakage past a hydraulic cylinder piston seal tested?

- A. Measure the fluid colour after a long shift of use
- B. Check the oil level in the reservoir sight glass daily
- C. Block one port, pressurize the other, and watch the blocked port
- D. Listen for noise from the hydraulic pump at idle

27. What does feathering across the ribs of a steer tire tread most often indicate?

- A. Excess wheel balance weight on the rim

- B. An air leak in the valve stem
- C. A worn center bearing in the driveshaft
- D. Incorrect toe setting scrubbing the tire sideways

28. A starter solenoid clicks but the starter does not turn. Battery voltage is good, and 11.8 volts is present at the solenoid S terminal during cranking. What next?

- A. Check voltage drop across the solenoid contacts
- B. Replace the ignition switch immediately and retest the circuit
- C. Check the alternator belt tension and pulley alignment
- D. Add coolant to the radiator and check the cap

29. A spring brake will not release even with full system air at the chamber. What is the correct action?

- A. Cut open the spring housing and release the spring by hand
- B. Tap the housing with a hammer until the spring releases
- C. Replace the complete spring brake chamber assembly
- D. Remove the hose and apply shop air at higher pressure

30. Range and splitter shifts on a manual transmission are slow, and air pressure at the transmission air filter regulator is below specification. What should be checked next?

- A. The engine oil viscosity grade in the sump
- B. The air filter and regulator for restriction
- C. The coolant concentration in the radiator and surge tank
- D. The wheel bearing end play on the drive axles

31. When a technician sets valve lash on an overhead-cam engine, the cylinder being adjusted must be positioned where?

- A. At bottom dead centre on the exhaust stroke with the exhaust valve open

- B. At any position, provided the engine is cold and the rocker nuts are loose
- C. At top dead centre on the exhaust stroke with the intake valve starting to open
- D. On the compression stroke with both valves closed and the cam on its base circle

32. An air conditioning evaporator ices over, and airflow from the vents is low. Which cause should be checked first?

- A. A radiator cap that is releasing early
- B. A worn clutch disc in the transmission
- C. An air dryer desiccant failure
- D. A blocked cabin filter or blower path

33. A 24-volt relay coil measures 80 ohms. About how much current does the coil draw when it is energized from the 24-volt system?

- A. 0.3 amps
- B. 3.3 amps
- C. 0.03 amps
- D. 1.9 amps

34. Steer tires show cupped wear and the truck vibrates at 80 km/h. Which cause is most likely?

- A. Excess toe-in on the rear axle of the truck
- B. A clogged fuel filter on the engine supply side
- C. Worn shock absorbers or imbalance letting the tire bounce
- D. Low engine coolant in the surge tank

35. A viscous torsional damper on a diesel crankshaft shows fluid seeping from the case and a visible wobble. What is the correct action?

- A. Top up the fluid through the filler plug and recheck after a test drive

- B. Replace the damper, because its fluid and bonded elements cannot be repaired
- C. Balance the damper on a lathe and reinstall it with new bolts
- D. Leave it in service, since a wobble alone does not affect engine life

36. One drum shows blue heat discoloration and fine heat checks while the others look normal. Which cause is most likely?

- A. A dragging brake from a slack adjuster or camshaft that is not releasing
- B. A parking brake applied too lightly during normal stops on a grade
- C. Moisture in the compressor discharge line freezing in winter weather
- D. A weak governor cut-in setting raising reservoir pressure at idle

37. A manual transmission runs hot, and the oil level is found far above the fill plug. What is the likely effect?

- A. Lower friction so the temperature falls steadily
- B. Oil churning and aeration cause heat and leaks
- C. Improved lubrication and a longer gear life
- D. Reduced gear noise at all road speeds

38. A headlamp is dim. The battery reads 12.8 volts, but only 10.5 volts is measured at the lamp with it on. What does this indicate?

- A. A normal drop that is acceptable for lamps on trucks
- B. A faulty alternator that is overcharging the system
- C. A lamp with too much current capacity for the circuit
- D. High resistance in the feed or ground path

39. A tilt cab does not latch fully and the dash warning lamp stays on. What should be inspected first?

- A. The compressor governor setting and cut-out pressure

- B. The transmission fluid level and filter condition
- C. The latch hooks, striker pins, and adjustment
- D. The alternator belt tension and pulley alignment

40. Two tires in a dual assembly are 70 kPa apart in inflation pressure. What is the likely effect?

- A. The softer tire wears and overheats while the other carries extra load
- B. Both tires wear evenly because they share load equally between them
- C. The brakes lock up because of the pressure difference between the tires
- D. Fuel economy improves from reduced rolling resistance on the duals

41. Oil pressure is normal at 1,800 rpm but falls sharply at hot idle. Which condition is most likely?

- A. A clogged oil pump pickup screen that restricts flow at all speeds
- B. Excess bearing clearance, which leaks hot thin oil at low pump speed
- C. A stuck-closed pressure relief valve in the oil pump
- D. Too much oil in the sump aerating the oil at high speed

42. A technician rocks a drive-axle ring gear by hand while holding the pinion still, with a dial indicator on a tooth. What is being measured?

- A. Axial endplay of the differential carrier bearings
- B. Radial runout of the ring gear mounting flange
- C. Gear backlash between the ring gear and pinion
- D. Pinion bearing preload in newton-metres of rotation

43. A refrigerated trailer shows high head pressure and cannot reach set point, though the cargo area was pre-cooled. What is the most likely cause?

- A. A low engine oil level in the tractor
- B. A flat trailer tire on the rear axle

- C. A weak tractor battery during starting
- D. A dirty condenser coil or failing condenser fan

44. Which tool is used to verify a hydraulic relief valve setting?

- A. A thermometer on the reservoir
- B. A tachometer on the pump shaft
- C. A flow meter on the return line
- D. A pressure gauge at the pump outlet

45. When a slack adjuster is correctly installed and the service brake is applied halfway through stroke, what angle should the adjuster arm make with the pushrod?

- A. About 45 degrees
- B. About 135 degrees
- C. About 90 degrees
- D. About 180 degrees

46. An automatic transmission goes into limp mode and shows a check-transmission lamp. What is the best first step?

- A. Drain the fluid and refill with a different brand of fluid
- B. Connect a scan tool and retrieve the diagnostic codes
- C. Replace the valve body without any further testing first
- D. Disconnect the battery for ten minutes and drive the truck

47. A technician replaces a repeatedly blowing 20-amp fuse with a 30-amp fuse. Why is this unacceptable?

- A. The wiring is sized for the original rating and may overheat
- B. A larger fuse always causes the circuit to blow much sooner

- C. A larger fuse changes the system voltage in the circuit
- D. A larger fuse will not physically fit the fuse holder

48. While cutting open a used oil filter, a technician finds a small amount of bright copper-coloured glitter in the pleats. What does this most likely indicate?

- A. Normal soot carried in the oil from diesel combustion
- B. Bearing material wear that must be traced
- C. Dust from the air intake bypassing the air filter
- D. Residue from a recently added oil additive package

49. Both gauge readings are high, cooling is weak, and the condenser is hot to touch. Which cause is most likely?

- A. A refrigerant leak that has emptied the system
- B. A failed compressor clutch that is not engaging
- C. A frozen expansion device at the evaporator inlet
- D. Too much refrigerant or restricted condenser airflow

50. Which tightening sequence is correct for hub-piloted wheel nuts on a truck wheel?

- A. Tighten gradually in stages using a crisscross pattern to the specified torque
- B. Tighten each nut fully in a clockwise circle one after the other
- C. Tighten only the top nut and bottom nut and trust the rest
- D. Use an impact wrench at full power until the gun stops

51. A hybrid truck sets an insulation resistance fault. Which cause is most likely?

- A. Low tire pressure on the drive axle
- B. A weak 12-volt headlamp on the cab
- C. Damaged high-voltage cable insulation or moisture in a component

D. A dirty cabin air filter in the HVAC box

52. A scan tool shows intermittent dropout from one wheel speed sensor above 40 km/h only. Which cause is most likely?

- A. A weak battery causing low supply voltage at the ECU
- B. A leaking brake chamber diaphragm on that axle
- C. A worn compressor intake filter reducing air supply
- D. A damaged tone ring or a loose sensor clip

53. A converter stall test shows an engine speed far higher than the specification. What does this suggest?

- A. The engine is producing too much power at stall
- B. Internal clutches or converter slipping, or low line pressure
- C. The transmission fluid level is too high in the sump
- D. The axle ratio is too numerically high for the truck

54. Which repair is best for corroded wire in a weather-exposed harness?

- A. Stagger splices and use sealed crimped or soldered joints with heat shrink
- B. Twist the wires together and wrap them with electrical tape
- C. Use a wire nut and leave the joint exposed to the weather
- D. Cover the corroded section with grease only, then wrap it

55. Used-oil analysis reports 3 percent fuel dilution and a drop in viscosity. Which cause is most likely?

- A. A dirty fuel filter restricting flow to the injection pump
- B. A weak glow-plug circuit delaying cold starts
- C. A leaking injector or injector seal
- D. A saturated crankcase breather allowing vapour to escape

56. A technician sees rust streaks and cracked paint around the wheel nuts of one wheel. What does this suggest?

- A. The wheel is correctly torqued and has been recently painted
- B. The brake linings are worn evenly on that axle end
- C. The nuts are loose and the wheel has been moving
- D. The wheel bearing has too much grease inside the hub

57. With batteries disconnected, a technician reads 120 ohms between CAN-H and CAN-L on a J1939 backbone. What does this suggest?

- A. The network is healthy because 120 ohms is the expected total
- B. Both terminating resistors are shorted inside the backbone
- C. The ECU is overheating and needs to be replaced
- D. One terminating resistor is missing, or the wiring is open

58. A bearing race shows evenly spaced shallow dents matching the roller spacing, and the bearing never ran long. Which cause fits best?

- A. Brinelling from a shock load or static overload on the stationary bearing
- B. Spalling from long-term fatigue after millions of load cycles on the race
- C. Etching from moisture left inside the bearing cavity during storage
- D. Fretting from the race slowly working against its housing under vibration

59. A trailer landing gear leg binds while being cranked with the trailer unloaded. What is the best first action?

- A. Hammer the leg straight while it is still under load
- B. Inspect for a bent leg, damaged gears, or dry lubrication
- C. Add several tonnes of cargo to force it free

D. Spray the crank handle only and keep cranking hard

60. A newly installed hydraulic hose is twisted along its length. What is the likely result?

- A. Improved flow because the fluid spirals through the hose
- B. Reduced hose life and a risk of loosened fittings
- C. No effect, because hoses are designed to be twisted
- D. Lower fluid temperature in the circuit and the reservoir

61. How is the dual air brake circuit isolation checked with the protection valve?

- A. Disconnect both reservoirs and measure the compressor output at the governor
- B. Apply the parking brake and watch the dash gauge for needle movement
- C. Drain one service reservoir and confirm the other holds pressure
- D. Block the trailer supply line and read the pressure at the dryer

62. After a failed automatic transmission is rebuilt, why must the external cooler and lines be flushed?

- A. Debris and friction material from the failure can damage the new unit
- B. The cooler lines change length after a rebuild is completed
- C. Flushing adds friction modifier to the fluid cooler circuit
- D. The cooler cap must be lubricated with grease before use

63. A refractometer shows coolant protection only to minus 22 degrees Celsius, but the operating area needs about minus 37. What is the correct correction?

- A. Add clean distilled water to dilute the mix and lower its freezing point
- B. Add a rust inhibitor additive to increase the freeze protection
- C. Replace the thermostat so the engine runs warmer and resists freezing
- D. Drain some coolant and top up with the specified antifreeze to about 50 percent

64. A wheel-end oil bath hub shows milky oil in the sight glass. What is the likely cause?

- A. A too-high oil temperature burning off additives
- B. Water contamination through a failed seal or vent
- C. Normal oil colour for synthetic gear lubricant
- D. A bearing that is too loose on the spindle

65. A scan tool shows engine coolant temperature stuck at minus 40 degrees Celsius. Which circuit fault matches this reading?

- A. An open circuit or unplugged sensor pulling the signal to reference voltage
- B. A short to ground that pulls the signal down to zero volts
- C. A reference voltage that is set too high at the battery
- D. A low coolant level at the thermostat housing

66. A radiator cap pressure test shows it releases at 90 kPa when the specification is 103 kPa. What is the likely consequence?

- A. The engine runs colder and takes longer to warm up
- B. The heater core receives higher pressure and may rupture
- C. Coolant boils at a lower temperature and boils over sooner
- D. Coolant circulation stops because the cap valve stays closed

67. The low-air warning does not sound or light when reservoir pressure is bled below 414 kPa (60 psi). Which component should be tested first?

- A. The compressor governor and unloader line
- B. The air dryer purge valve and heater
- C. The service brake slack adjusters on the front axle
- D. The low-pressure switch and its wiring

68. After replacing a clutch in an automated manual transmission, what must be done before returning the truck to service?

- A. Add a friction modifier to the transmission oil
- B. Adjust the clutch pedal free play at the pedal
- C. Replace the transmission control unit with a new one
- D. Run the clutch touch-point learn procedure with the scan tool

69. Water leaks into the cab at the lower door corner. Which method best locates the leak?

- A. Spray the engine bay with a hose and watch the dash
- B. Run water over the door with a helper inside
- C. Pressure test the cooling system with a hand pump
- D. Measure the voltage at the door lock motor connector

70. A manifold gauge set shows low-side vacuum and a low high-side reading, with frost at the orifice tube. What does this indicate?

- A. An overcharged system with too much refrigerant
- B. A compressor that is running too fast
- C. A restriction in the orifice tube
- D. A condenser fan that is operating normally

71. A technician measures 2 volts across a closed switch with the circuit operating. What is the conclusion?

- A. The contacts have high resistance, so the switch should be replaced
- B. The switch is working normally because some drop is expected
- C. The circuit is carrying far too little current for the load
- D. The battery is overcharged and the regulator has failed

72. A truck leans to one side after sitting overnight, and the air supply shows full pressure at the start. Which cause is most likely?

- A. A worn front tie-rod end on the steer axle
- B. A weak alternator on the engine drive belt
- C. A leaking air spring or height valve on the low side
- D. A glazed clutch disc in the bellhousing area

73. An engine runs cold, the heater output is poor, and fuel economy is down. Coolant level is correct. Which component is the most likely cause?

- A. A thermostat stuck in the closed position
- B. A thermostat stuck in the open position
- C. A radiator cap that holds excessive pressure
- D. A water pump impeller that has slipped on its shaft

74. A technician applies the brakes and sprays soap solution around a service brake chamber. What leak is this test finding?

- A. A leaking compressor discharge line at the engine
- B. A cracked air dryer desiccant cartridge in the housing
- C. A faulty ABS wheel speed sensor circuit on the axle
- D. A leaking diaphragm or clamp ring on the chamber

75. A driveline clunk is heard when the throttle is applied or released. Which component is the most likely cause?

- A. A worn universal joint or slip yoke with excess play
- B. A worn fuel injector nozzle on one cylinder
- C. A weak battery cell in the starting bank
- D. A restricted radiator core in the cooling module

76. Which metric bolt head marking indicates the highest tensile strength?

- A. 8.8
- B. 9.8
- C. 12.9
- D. 10.9

77. After an emergency application, a trailer's brakes stay applied even with supply pressure restored. Which part is most likely stuck?

- A. The trailer emergency relay valve
- B. The tractor air dryer purge valve
- C. The dash low-pressure switch
- D. The steering gear relief valve

78. Hydraulic oil from a work truck appears milky when drained. What does this indicate?

- A. A normal sign of fluid additives dissolving in the oil
- B. Water contamination that must be traced and the fluid replaced
- C. Excess air that will settle out after a short rest
- D. Metal particles from normal wear of the pump gears

79. After fitting LED turn signal lamps on a truck, the flasher rate doubles. Why?

- A. The LEDs draw too much current for the flasher
- B. The flasher has been installed backward in the holder
- C. The battery voltage has risen above its normal level
- D. Low LED current looks like a burned bulb

80. After a main leaf spring is replaced, what should be checked before the truck returns to service?

- A. Engine oil viscosity grade and level in the sump
- B. Axle alignment, tracking, and U-bolt torque after settling
- C. Alternator belt tension and the pulley alignment
- D. Windshield washer pressure and nozzle aim in the cab

81. A technician finds milky oil on the dipstick while the coolant level is falling, and a pressure test holds steady. Which component should be suspected first?

- A. An oil cooler core leaking coolant into the oil
- B. A fuel injector leaking fuel into the crankcase
- C. A turbocharger seal leaking oil into the intake
- D. A cracked air compressor line leaking air into the sump

82. An intermittent loss of ECM power occurs only over bumps. Which check is most useful?

- A. Replacing the ECM and checking again for the fault
- B. Increasing the alternator output setting at the regulator
- C. Draining the coolant to look for debris in the system
- D. A wiggle test of the power and ground connector pins

83. A brake drum measures exactly at its stamped discard diameter after turning. What must be done?

- A. Turn it once more to remove the heat checks and rust
- B. Install thicker linings to compensate for the extra drum diameter
- C. Replace the drum, because it has reached its wear limit
- D. Reuse it if the drum shows no visible cracking or scoring

84. After a driveshaft is reinstalled, a vibration appears that rises with road speed. What should be checked first?

- A. The coolant level in the surge tank and the hoses
- B. The tire tread depth on the steer axle position
- C. Yoke phasing marks and driveshaft runout limits
- D. The air pressure in the brake reservoirs and lines

85. An electric truck limits charge and discharge power on a very cold morning. What is the most likely reason?

- A. The inverter has permanently failed and needs replacement
- B. The battery management system limits power when cells are cold
- C. The charging cable is too long for the connector rating
- D. The tires are over-inflated and raise rolling resistance

86. Why are suspension bushing fasteners tightened with the truck at normal ride height?

- A. To make the bolts easier to turn by hand
- B. To reduce the torque needed on the nuts
- C. To keep the shock absorbers from leaking
- D. To avoid pre-loading the rubber, which would twist it

87. A turbocharged engine shows low boost and black smoke under load, and the air filter restriction indicator is normal. What should be checked first?

- A. The charge air cooler, piping, and clamps for boost leaks
- B. The injector return lines for fuel leaks and restrictions
- C. The valve lash on the exhaust valves and rocker arms
- D. The coolant thermostat opening temperature in the housing

88. Why is the receiver-drier or accumulator normally replaced whenever the A/C system has been opened?

- A. It adds new refrigerant to the system
- B. Its desiccant absorbs moisture, and wet desiccant stops protecting the system
- C. It lubricates the compressor bearings during operation
- D. It cools the refrigerant before it reaches the condenser

89. A 280-amp cranking current produces a 0.35-volt drop across a battery cable. What is the cable's resistance?

- A. 0.80 milliohms
- B. 12.5 milliohms
- C. 1.25 milliohms
- D. 98 milliohms

90. A disc brake caliper slide pin is seized. What is the likely result?

- A. Higher air pressure at the reservoir during stops
- B. Improved brake balance across the axle
- C. Faster compressor loading after each stop
- D. Uneven pad wear and drag

91. A leak appears at the transmission output shaft seal, and the slip yoke seal surface is deeply grooved. What is the correct repair?

- A. Replace the seal and the worn yoke or sleeve
- B. Replace the seal only and coat the lip with extra sealant
- C. Sand the groove smooth and reinstall the same worn seal
- D. Lower the fluid level below the seal and monitor the leak

92. A technician lifts an 800 kg transmission using two sling legs, each at 45 degrees to the horizontal. About what tension acts on each leg?

- A. 566 kg
- B. 283 kg
- C. 400 kg
- D. 800 kg

93. A trailer with air ride sits too low even though supply pressure is normal. Which component is the likely cause?

- A. The kingpin at the upper coupler plate
- B. The ride height control valve or its linkage
- C. The reefer unit fuel filter on the tank
- D. The hub oil level in the wheel ends

94. A hydraulic system fluid temperature reaches 95 degrees Celsius under light work. Which cause is most likely?

- A. A reservoir filled to the correct level with clean oil
- B. A new return filter installed at the last service
- C. A relief valve that stays open or a restricted cooler
- D. A hose of the correct length and size on the pump

95. A turbocharger failed from oil starvation. What must be confirmed before installing the replacement?

- A. The boost control actuator has been replaced and calibrated to a lower pressure
- B. The exhaust system has been shortened to reduce back pressure on the turbine
- C. The air filter has been removed to give the new turbo a free flow of air
- D. The oil supply is clear, the drain is unobstructed, and the new turbo is pre-lubricated

96. A frame measured diagonally shows one pair of measurements differing by 15 mm. What does this mean?

- A. The frame is normal because diagonals always differ slightly
- B. The measurement shows a worn kingpin on the trailer
- C. The frame is out of square and needs straightening
- D. The frame is overheated and must cool before measuring

97. An air-suspension driver's seat will not hold its height. How is the leak located?

- A. Spray soapy water on the bag and valve
- B. Replace the seat cushion foam with a firmer type
- C. Increase the seat air supply pressure to the maximum
- D. Remove the seat base and weld the cracked frame

98. Why should a technician never use an ohmmeter or continuity mode on a circuit that is powered up?

- A. The meter reads too low and gives a safe reading
- B. The meter adds its own current, so outside voltage spoils the reading
- C. The circuit must be live to avoid false readings
- D. The meter can only be used with the key switched on

99. The compressor keeps building pressure above cut-out, and the reservoir safety valve opens at 1,035 kPa. What is the likely cause?

- A. A leaking spring brake chamber on the drive axle
- B. A weak battery causing the compressor motor to slow
- C. A cracked radiator hose causing the engine to overheat
- D. A governor or unloader that will not stop loading

100. What is the effect of setting a differential carrier bearing preload too tight?

- A. Excess heat and early bearing failure
- B. Quieter gear operation with no downside at all

- C. More backlash between the ring gear and pinion
- D. Lower oil temperature in the axle housing sump

101. A diesel particulate filter shows high differential pressure, and passive regeneration is incomplete because the truck makes short trips. What is the correct step after the cause is confirmed?

- A. Drill out the filter body to clear the soot from the channels
- B. Clear the fault codes and return the truck to service immediately
- C. Raise the idle speed with a jumper to burn the soot off over a week
- D. Perform a forced or stationary regeneration with the scan tool

102. A fleet tracking unit wired to constant battery power drains the batteries overnight. What is the best correction?

- A. Leave it connected and charge the batteries weekly
- B. Install a larger fuse in the supply wire
- C. Rewire it through a switched ignition source
- D. Add a second alternator to the engine belt drive

103. Where may holes be drilled in a heat-treated truck frame rail?

- A. In the top flange, near the middle of the span
- B. In the web at manufacturer-approved locations, never in the flanges
- C. In the bottom flange, where the stress is lowest
- D. Anywhere on the rail, provided each hole is deburred

104. A DEF sample tested with a refractometer reads about 22 percent urea instead of 32.5 percent. What does this indicate?

- A. The fluid is correct, because DEF may vary by 10 percent
- B. The fluid is diluted or contaminated and the system needs flushing

- C. The fluid has been frozen and thawed, which is normal in winter
- D. The fluid is concentrated and should be diluted with a little water

105. A compressor clutch will not engage. Battery voltage and ground are present at the coil connector, but the coil reads open on an ohmmeter. What is the repair?

- A. Replace the clutch coil, since the winding is open
- B. Recharge the system with a measured amount of refrigerant
- C. Replace the blower motor resistor behind the dash
- D. Flush the evaporator with solvent and a nitrogen purge

106. An air dryer's desiccant cartridge is found saturated with oil. What is the correct repair?

- A. Bake the cartridge in an oven and reinstall it
- B. Add extra desiccant beads to the used cartridge
- C. Leave it in place because oil protects the beads from moisture
- D. Replace the cartridge and fix the oil source

107. Gear oil is found leaking past the wheel seals inside the brake drum, and the axle breather is plugged. What is the likely cause of the leak?

- A. Gear oil that is too thin to lubricate the pinion
- B. A worn brake chamber diaphragm on that axle
- C. Pressure building in the housing and forcing oil past seals
- D. An over-torqued wheel nut on the outer bearing

108. A 5-volt reference circuit reads about 0.3 volts at a sensor connector. Which fault is most likely?

- A. An open circuit in the 5-volt reference wire
- B. A high battery voltage on the sensor ground circuit
- C. A short to ground in the reference wire

D. A corroded battery terminal at the starter post

109. A fifth wheel top plate is loose with fretting at the mounting bracket bolts. What is the correct repair?

- A. Inspect for cracks, replace worn parts, and torque the fasteners to specification
- B. Add more grease to the top plate and keep driving the unit
- C. Weld the plate to the frame to hold it firmly in place
- D. Drill larger holes in the plate to fit oversized bolts

110. An oxy-fuel cylinder must be moved across the shop. Which practice is correct?

- A. Roll it on its bottom edge with the cap removed so the valve stays easy to reach
- B. Lay it flat on a creeper so the regulator can stay attached during the trip
- C. Carry it by the valve with the regulator fitted so both hands remain free
- D. Close the valve, fit the protective cap, and move it secured upright on a cylinder cart

111. A refrigerated trailer's evaporator coil is iced over and airflow is poor. What is the correct first corrective step?

- A. Add more refrigerant to the system to raise capacity
- B. Run a defrost cycle, then check the defrost sensor and termination
- C. Close the trailer doors for the next trip to keep air out
- D. Replace the trailer tires and check the axle alignment

112. What must be true of the working pressure rating of a replacement hydraulic hose?

- A. It may be lower than system pressure if the hose is short
- B. It only needs to match the pump flow rate
- C. It must meet or exceed the maximum system pressure, including pressure spikes
- D. It is irrelevant if the fittings are tightened well

113. A diesel hard to start at minus 30 degrees Celsius has a waxy fuel filter, and summer-blend fuel is in the tank. What is the best correction?

- A. Replace the filter, use winter-blend fuel, and warm the fuel system
- B. Add gasoline to the tank to thin the fuel and prevent waxing
- C. Run the engine at fast idle until the filter clears the wax
- D. Shorten the fuel return line so warm fuel circulates less often

114. When the right turn signal is used on a trailer, the left lamps also glow dimly. Which fault is most likely?

- A. A tractor alternator that is overcharging the system
- B. A poor or open ground at the trailer causing current backfeed
- C. A failed trailer brake chamber on the rear axle
- D. A saturated air dryer desiccant cartridge on the tractor

115. After relining brakes on one axle with a different friction material, the truck pulls to one side under braking. What is the most likely reason?

- A. The new linings have raised the compressor output pressure
- B. The slack adjusters have been set too long on the other axle
- C. The ABS modulator has retained an old wheel speed reading
- D. Mismatched lining friction produces unequal braking force across the axle

116. When should the inter-axle differential lock normally be engaged?

- A. When traction is lost and the truck moves straight
- B. Always, so both axles share the load on dry highways
- C. Only while turning sharply on dry pavement at low speed
- D. While the truck is parked with the engine switched off

117. After a tire rotation, the TPMS warning lamp stays on although all pressures are correct. What is the likely correction?

- A. Replace all four valve stems with metal ones
- B. Add nitrogen to each tire to match the old gas
- C. Reset the transmission shift schedule with the scan tool
- D. Run the sensor relearn procedure for the new tire positions

118. An electric truck's 12-volt auxiliary battery keeps discharging and a warning is displayed. Which component should be tested?

- A. The engine alternator belt and tensioner
- B. The fuel filter and water separator
- C. The DC-DC converter feeding 12 V
- D. The turbocharger actuator and its wiring

119. Before loosening a high-pressure fuel line on a common-rail diesel, what is the correct precaution?

- A. Loosen the fitting slightly with the engine idling to release the pressure gradually
- B. Shut off the engine and let rail pressure bleed down per the maker's procedure
- C. Hold a rag over the fitting while the engine is cranking to catch the spray
- D. Open the fitting while a helper presses the throttle to lower rail pressure

120. Why is a voltage drop test under load more useful than a resistance test with the circuit off?

- A. It uses less current and so is safer for the meter
- B. It avoids the need for a meter altogether
- C. It always gives lower readings than a resistance test
- D. It finds high-resistance faults that appear only under current

121. Why must a truck with a newly bonded windshield not be driven until the specified cure time has passed?

- A. The glass must be allowed to cool after installation
- B. The urethane must cure so the glass supports the cab structure and airbags
- C. The wipers need time to adjust to the new curve
- D. The defroster needs time to dry the new seal

122. A truck's air brake system is tested for a stuck application. Which observation would point to a restricted exhaust in the dash parking valve circuit?

- A. Spring brakes apply slowly after pulling the valve
- B. Spring brakes release immediately once pressure is built
- C. Service brakes release normally when the pedal is released
- D. The low-pressure lamp goes out at about 480 kPa

123. A manual transmission rattles at idle in neutral, and the noise stops when the clutch pedal is pressed. Which parts are the most likely source?

- A. The clutch release bearing and its fork
- B. The output shaft yoke that spins only when moving
- C. Worn input shaft or countershaft bearings and gear teeth
- D. The flywheel ring gear and starter drive

124. A technician finds a bulge on the sidewall of a truck tire. What is the correct action?

- A. Patch the bulge from the inside and continue using it
- B. Remove the tire from service because the casing is damaged
- C. Lower the pressure by 100 kPa to reduce stress
- D. Mark the bulge and check it again next month

125. A compression brake produces weak retarding power on one bank while the solenoid circuits show correct voltage. What should be checked next?

- A. The alternator output under load at idle
- B. The fuel filter restriction on the high-pressure side
- C. The coolant temperature sensor resistance value
- D. Oil supply pressure and slave piston lash

126. Which procedure best confirms the A/C system is leak tight before it is charged?

- A. Evacuate the system and confirm the vacuum holds for the specified time
- B. Add refrigerant and listen for a hiss at each fitting
- C. Run the engine at high idle with the compressor off
- D. Check the oil level in the compressor sight glass

127. A starter relay chatters rapidly when the key is turned, and battery voltage reads 10.4 volts when cranking is attempted. What is the most likely cause?

- A. An overcharged battery with a failed regulator
- B. A seized air compressor on the engine front
- C. A discharged battery or poor connection
- D. A coolant leak at the thermostat housing area

128. An apprentice repeatedly skips the lockout step before working under a raised hoist. What is the best response from the journeyman?

- A. Finish the job yourself and say nothing, so the apprentice is not discouraged
- B. Wait for a near miss, since experience teaches safety faster than instruction
- C. Send the apprentice to read the manual alone and resume after lunch
- D. Stop the job, explain the hazard and procedure, then watch a correct repeat

129. A trailer kingpin is worn beyond the wear limit of its gauge at the lock groove. What is the correct action?

- A. Replace the kingpin or upper coupler assembly and recheck
- B. Grease the kingpin heavily and return the trailer to service
- C. Weld a bead around the groove to build it back up
- D. Machine the groove deeper so the jaws still fit

130. A technician installs a hydraulic pump that rotates opposite to its design direction. What is the likely result?

- A. Higher flow and better efficiency from the pump
- B. Little or no flow and possible shaft seal failure
- C. No change, since all pumps run in either direction
- D. Lower noise at the pump and cooler running oil

131. Which result follows from a weak or broken brake shoe return spring on a drum brake?

- A. The brake chamber builds higher air pressure at each stop
- B. The ABS system shuts down until the ignition is cycled
- C. The shoes release slowly or drag and overheat
- D. The compressor loads more often to refill the reservoirs

132. A truck has a tire rolling circumference of 3.2 metres, an axle ratio of 3.55, and a transmission in direct drive (1:1). What is the approximate road speed at 1,500 rpm?

- A. 71 km/h
- B. 91 km/h
- C. 101 km/h
- D. 81 km/h

133. A steer axle shimmies after a tire change. Which measurement helps find a bent wheel?

- A. The coolant freeze point of the radiator mix
- B. Radial and lateral wheel runout, dial indicator
- C. The fuel rail pressure at idle speed
- D. The alternator ripple voltage at the battery

134. A common-rail engine sets a code for rail pressure below command. Which test comes first?

- A. Check low-pressure supply and filter restriction first
- B. Replace the high-pressure pump and then recheck the rail
- C. Replace all of the injectors and recheck rail pressure
- D. Reprogram the ECM with the latest calibration file

135. A drive with no faults shows the battery voltage varying from 13.0 volts to 14.9 volts. Which statement is correct?

- A. The alternator regulator has failed and must be replaced
- B. The battery is badly sulphated and no longer usable now
- C. This can be normal when the ECM commands alternator output by battery state
- D. The belt is slipping and must be tightened up again

Practice Exam 21: Answer Key and Explanations

1. C — Parallel batteries share load according to their condition. A weak battery pulls the new one down, drawing unequal current and aging both. Parallel connection keeps the voltage at 12 volts and does not double it, and mixing old and new rarely produces a balanced improvement. Match batteries in age, size, and condition whenever they are paralleled.

2. A — White smoke with a sweet odour and falling coolant means coolant is being burned in a cylinder. A repeat leak after a gasket job points to a gasket not sealing, a cracked head, or a warped surface. A stuck injector smells of fuel and a closed thermostat does not consume coolant.

- 3. B** — Free play at the steering wheel comes from looseness in the steering linkage joints or gear lash. Rocking the wheel with the engine off and watching each joint finds the worn component. The compressor line, injection pump timing, and carrier bearings are not part of the steering linkage. Wear in these joints is usually felt as looseness.
- 4. A** — Carbon in the discharge line comes from oil that is carried past the compressor rings and cooked by heat, so worn rings or a restricted intake that lets oil be drawn past are likely. Desiccant, governor setting, and a trailer valve leak do not deposit carbon at the compressor discharge.
- 5. B** — A pedal that sinks while held, with no external leak, shows fluid bypassing the master cylinder piston seal inside the bore. Worn pilot bearings, glazed flywheels, and bent input shafts cause noise, slip, or vibration but do not let the pedal drift down under constant pressure. Check the reservoir level and bleed after repair.
- 6. D** — Neutral and a switched-off PTO do not remove stored energy or prevent restart. A personal lock and tag with key removed isolates the source, and the final attempt to turn the shaft verifies isolation. Relying on a coworker or an idling engine leaves the hazard fully active and breaks lockout practice.
- 7. C** — A trailer ABS needs power and ground before it can run its self-test, so confirming supply at the connector is the quickest start, followed by reading fault codes. Replacing chambers, retorquing nuts, or filling reservoirs with oil is unrelated and may cause damage. Codes then show whether a sensor, modulator, or wiring fault exists.
- 8. D** — A whining pump and foam point to cavitation or aeration, where the pump cannot draw enough oil because the suction is restricted or air enters. A low relief setting, a worn wiper, and a clean new filter do not starve the pump or create foam. Inspect the suction hose and strainer before replacing the pump.
- 9. C** — Draw is measured in series with the ammeter, and modules need time to enter sleep mode, otherwise the reading shows temporary loads. An ammeter across the posts is a short circuit, and an ohmmeter measures resistance, not current. Reading right after disconnecting gives a falsely high value. Sleep time is commonly many minutes on late models.
- 10. B** — Air escaping at the oil fill opening has passed the piston and entered the crankcase, so the rings or liner are worn. A burned exhaust valve leaks at the tailpipe, an intake valve leak is heard at the intake, and a head gasket leak shows bubbles in the coolant. Rings and liners are measured afterward.
- 11. A** — Hot hoses show coolant is reaching the core, so the problem is in the air path, where a blend door or actuator may be stuck. A thermostat, cap, or weak pump would affect coolant temperature or flow, which the hot hoses show is normal. Check the actuator motor, linkage, and control signal during diagnosis.
- 12. A** — Wander with tight linkage and even tire pressures points to looseness inside the gear or weak self-centring. Worn sector mesh adds lash, and low positive caster reduces the steering return force that tracks the truck straight. Tire inflation on the rear axles, front lining wear, and a seal leak do not cause steering wander.

13. D — Continuous air from the dryer exhaust while loading means air is escaping through the purge valve or flowing backward through a leaking check valve. A cabin filter, a cracked drum, and low coolant are unrelated to air leaving the dryer exhaust and would not produce a constant blow. Replace the purge valve kit and the check valve.

14. C — The pilot bearing holds the nose of the input shaft in line with the crankshaft. When worn it causes noise, vibration, and uneven disc wear, and it is cheap to replace while the transmission is out. It does not carry driveline torque, seal oil, or move the release fork. Replacement costs little while the housing is open.

15. B — A cab on air springs is held up by air, so a slow leak in the bag or leveling valve lets that corner settle. Driveline joints, fuel filters, and batteries do not support the cab, and they cannot cause one side to sag while parked. Inspect the bag, fittings, and leveling valve with soap solution.

16. A — A charging system that gives battery-level voltage at speed is not producing. With a good belt, measure output voltage and inspect the output wire, connections, and fuse link before condemning the alternator. Replacing the battery without testing ignores the cause, and oil pressure is unrelated. Voltage tests at the output post show whether the unit charges.

17. D — Plastigage crushes wider where clearance is smaller, so a strip that is wider at one end shows less clearance there and a taper in the journal or bore. A larger clearance would crush the strip narrower. An overtightened cap or blocked oil hole would not create an uneven strip width.

18. C — High-voltage systems contain capacitors that hold dangerous voltage after power is removed, and they need time to bleed down. Technicians wait the specified time and then verify zero volts. The 12-volt battery, coolant temperature, and transmission position have nothing to do with the waiting period. Always verify zero volts with a rated meter before touching.

19. A — Turning to full lock demands the highest hydraulic pressure, and a weak pump relief or a relief valve opening early limits assist at that point. Brake chambers, radiator hoses, and clutch bearings have no influence on steering effort at full lock. Pump output and relief setting are tested with a gauge to confirm assist pressure.

20. B — With the trailer supply valve out, the trailer is isolated and pressure holds, so the tractor is not the source. Pushing it in connects the trailer, so a leak in the supply line, gladhand seals, or trailer reservoir and valves is likely. Tractor chambers and governor would leak with the valve out as well.

21. D — A gear that jumps out under load is not being held in mesh, which is caused by worn engagement teeth, a worn fork, or a weak detent. Overfilled oil raises temperature, and a glazed disc or a clutch brake air problem affects clutch action, not gear retention under load. Repair means replacing the worn parts.

22. B — A positive cable drop of 0.9 volts is far above the usual guideline of a few tenths of a volt, so the cable, terminal, or connection has high resistance. Cleaning or replacing it restores starting voltage. A starter replacement or battery discharge does not cure a drop measured across the cable.

23. C — Wet liners must stand within a specified height above the block deck so the head gasket clamps them evenly and seals coolant and compression. Protrusion is measured with a dial indicator. Skirt clearance, crankshaft endplay, and camshaft lift are separate checks and do not confirm liner seating. Protrusion is checked at several points around each liner.

24. B — Under WHMIS, decanted hazardous products need a workplace label giving the product identifier and safe handling information, and the safety data sheet must be accessible. A date note or a flammability sticker alone is incomplete, and a container used by only one person still needs labelling because others may encounter it.

25. A — Dog tracking means the trailer follows a different path from the tractor, caused by axles that are out of square or bent, so the trailer pushes sideways. A low reservoir, a worn jaw, or a bulb does not change the way the axles line up behind the tractor. Axle alignment is measured against the trailer centreline.

26. C — To test a piston seal, the cylinder is positioned so fluid on one side can only leak past the piston to the other side. Pressure is applied while the other port is open, and flow there shows leakage. Fluid colour, reservoir level, and pump noise do not show seal leakage.

27. D — Feathering, where ribs are smooth on one side and sharp on the other, shows the tire is dragged sideways as it rolls, which is a toe misalignment. Wheel weights, valve leaks, and center bearings do not scrub the tread sideways across the contact patch. Correct toe is set on the alignment equipment after linkage repairs.

28. A — Control voltage at the S terminal is present, so the solenoid is being told to close. The heavy contacts or battery cables may not be passing current, so a voltage drop test across them finds the weak link. The ignition switch is already delivering voltage, and the belt and coolant are not involved.

29. C — A spring brake holds a heavily compressed power spring that can cause serious injury if released. A chamber that fails to release is replaced as an assembly after checking the hose and caging if needed. Cutting it open, hammering it, or raising the pressure risks injury or damage. The caging bolt is used only for towing.

30. B — Range and splitter shifts are operated by regulated air, so low pressure at the regulator slows the cylinders. A restricted filter or a faulty regulator is the logical next check. Engine oil grade, coolant strength, and wheel bearing adjustment have no connection with the shift air supply. Replace the regulator or filter and retest shift times.

31. D — Lash is measured with the valve fully closed, meaning the cam follower rides on the base circle. This happens on the compression stroke with both valves closed. Setting lash with a valve open or part-way through lift gives a false clearance and can leave the valve held off its seat.

32. D — Low airflow over the evaporator lets it drop below freezing so moisture turns to ice, and a clogged cabin filter or blocked path is a common cause. Radiator caps, clutch discs, and air dryers are unrelated to the airflow across the evaporator. Replace the filter, clean the blower path, and confirm the evaporator thaws and drains.

33. A — Current equals voltage divided by resistance, so 24 volts across 80 ohms gives 0.3 amps. A reading of 3.3 amps comes from dividing in the wrong order, 0.03 amps from a misplaced decimal, and 1.9 amps from multiplying instead of dividing. Relay coils draw small currents, which is why a small switch can control a large load.

34. C — Cupping, or scalloped wear, develops when the tire bounces as it rolls, usually from worn shock absorbers, wheel imbalance, or loose parts. Rear axle toe affects the rear tires, and fuel filters and coolant level do not make a tire bounce or cup. Replace the shocks and balance the tires, then check alignment.

35. B — A viscous damper is sealed and its silicone fluid cannot be refilled. Leakage and wobble mean it can no longer absorb torsional vibration, which risks crankshaft fatigue failure. Replacement is the only correct repair; balancing or topping up does not restore the damping action. Torsional vibration can crack a crankshaft if the damper fails.

36. A — Blue discoloration and heat checks mean the drum has been overheated, typically by a brake that stays partly applied. A binding camshaft, a seized adjuster, or a brake chamber that does not release can cause this. A lightly applied parking brake, moisture, and governor settings do not heat one drum.

37. B — Overfilling lets the gears churn the oil, which adds heat, aerates the fluid, and raises pressure that pushes oil past seals. Correct level is set at the fill plug. More oil does not reduce friction or noise, and it does not improve lubrication, which depends on correct level. Drain to the plug level to correct it.

38. D — A drop of 2.3 volts between battery and lamp is far beyond normal, so resistance is present in the feed or ground path, such as a corroded connector. Measuring along the circuit finds the point. An alternator fault would affect battery voltage, and lamp rating does not explain the drop.

39. C — A cab latch warning comes from a switch that senses the lock position, so the hooks, strikers, and linkage are inspected for wear, dirt, or misadjustment. Governor, transmission fluid, and belt tension are unrelated to the cab lock and should not delay the inspection of an unsafe latch. A loose cab is a serious road hazard.

40. A — A pressure difference changes the diameter and stiffness of each tire in the pair, so one carries more load and the other flexes more and overheats. Wear and heat build up unevenly. The pressure mismatch does not lock the brakes or improve economy. Keep duals within the tire maker's pressure tolerance and match diameters.

41. B — Worn bearings pass more hot, thin oil at low pump speed, so pressure drops when the engine idles hot but recovers when the pump spins faster. A blocked pickup would lower pressure at all speeds, a stuck-closed relief valve raises pressure, and overfill tends to cause trouble at high speed.

42. C — Holding the pinion and rocking the ring gear while the indicator tip rests on a tooth shows free movement between meshing teeth, which is backlash. Endplay needs a push-pull test along the axis, runout needs the gear rotated, and preload is read with a torque wrench on the pinion. Backlash is then compared to specification.

43. D — High head pressure means the refrigeration unit cannot reject heat, which a dirty condenser coil or a failing fan causes. Cooling capacity then drops. Tractor oil, a flat tire, and a tractor battery do not affect the condenser and cannot produce this pressure condition. Clean the coil and test the fan motor and relay.

44. D — A relief valve opens at a set pressure, so a gauge at the pump outlet shows the pressure at which it opens when the circuit is deadheaded safely. A thermometer, tachometer, and return flow meter measure other quantities and do not tell the technician the relief pressure. A gauge reads the actual opening pressure directly.

45. C — Brake geometry is designed so the adjuster arm and pushrod are near a right angle at about half stroke, giving the most consistent torque through the application. Other angles reduce leverage or cause uneven output, so the arm must be positioned correctly when it is installed and indexed. Correct geometry gives even brake force.

46. B — Limp mode is the control module protecting the transmission after a detected fault, and the codes explain the reason. Retrieving them with a scan tool directs the diagnosis. Changing fluid, replacing the valve body, or resetting the system without codes skips the evidence and can hide the fault. Fix the root cause before clearing codes.

47. A — Fuses protect the wire. A fuse of higher rating lets more current flow than the wire can carry, risking insulation damage and fire while the cause of the overload remains. The cause of the blown fuse must be found instead. A larger fuse does not change voltage or blow sooner.

48. B — Copper and lead-coloured metallic flakes come from bearing overlays or bushings, so they show internal wear that needs tracing. Soot is black and not glittering, dust is dull mineral grit, and additive residue is not metallic. Continued operation without finding the source risks a bearing failure. Cutting the filter open is a standard diagnostic technique.

49. D — High pressures on both sides with weak cooling suggest the system cannot reject heat, which an overcharge or blocked condenser airflow causes. A leak or an open clutch would give low pressures, and a frozen expansion device would show a low side vacuum and a low high side. Compare readings with a pressure chart for ambient temperature.

50. A — A wheel must seat evenly on the hub pilot. Staged tightening in a crisscross pattern draws it on squarely and brings every nut to the specified torque. Tightening in a circle can cock the wheel, and impact guns used to stall can overtorque and stretch studs. Retorque after the first short drive as the maker specifies.

51. C — An isolation fault means the high-voltage system is leaking current toward the chassis, usually from damaged cable insulation or moisture in a component. Tire pressure, a headlamp, or a cabin filter has no effect on isolation resistance, so those are not the cause. Isolation faults must be corrected before the pack is energized again.

52. D — Wheel speed sensors read tone ring teeth, and a damaged ring or a loose sensor that vibrates produces a signal that drops out as speed rises. A weak battery would affect all sensors, and a chamber

leak or compressor filter does not change the speed signal. Inspect the ring teeth and sensor gap with the wheel removed.

53. B — A stall speed above specification means the engine can spin freely because the clutches or converter cannot hold, or line pressure is low. A lower-than-spec reading suggests an engine power problem instead. Fluid overfill and axle ratio do not change stall speed in this way. Compare the measured speed with the manufacturer's stall specification.

54. A — Exposed harnesses need a sealed, mechanically sound joint. A crimped or soldered splice sealed with adhesive-lined heat shrink keeps out moisture, and staggering the splices avoids a thick bundle. Tape, wire nuts, or grease alone allow water in and the corrosion returns quickly. Choose a connector type rated for the vibration and moisture involved.

55. C — Fuel found in the oil usually enters through leaking injector seals or nozzles, or an internal fuel system leak, and it thins the oil. A dirty filter or weak glow-plug circuit affects supply or starting, and a blocked breather affects crankcase pressure, none of which puts fuel into the sump.

56. C — Rust trails and broken paint at the nuts show relative movement between the nut, stud, or wheel, meaning the nuts have loosened. The wheel, studs, and mating surfaces should be inspected before retorquing. Normal paint is not cracked, and linings and grease do not cause these marks. Inspect studs for stretch and cracks before retorquing.

57. D — A healthy J1939 backbone has a 120-ohm resistor at each end in parallel, which reads about 60 ohms. A reading of 120 shows only one terminator is being seen, so one resistor is missing or the wiring is open. A shorted pair would read close to zero, and ECU temperature is not the cause.

58. A — Dents spaced like the rollers are brinell marks, produced when the rollers are pressed into the race by impact or heavy static load. Fatigue spalling shows flaking after long service, etching shows frosted or stained surfaces, and fretting shows reddish wear on the mating fit, not roller-spaced indentations. Roller-shaped dents never appear from normal wear.

59. B — A binding landing gear leg points to a bent leg, damaged internal gears, or lack of lubrication, so the leg is inspected before it is cranked further. Forcing it with cargo weight, hammering a loaded leg, or cranking harder can strip gears or collapse the leg and drop the trailer nose on the ground.

60. B — A hose twisted during installation sees uneven stress as pressure changes, weakening the reinforcing layers and loosening fittings. It fails early. Twisting does not improve flow or lower temperature, and manufacturers show lay lines to help installers avoid twisting. Follow the lay line printed on the hose to confirm it is straight after tightening.

61. C — A protection valve closes at a set pressure so a failure in one circuit does not drain the other. Draining one reservoir and confirming the other holds pressure at that closing value shows the valve is isolating correctly. The other steps do not test the circuit isolation function. The test needs a calibrated gauge.

62. A — A failed unit sends metal and friction material through the cooler circuit, where it lodges and later returns to the transmission. Flushing, or replacing the cooler, removes the contamination. Lines do

not change length, and the other reasons given are not part of a standard repair procedure. Contaminants hide in the cooler circuit and return later.

63. D — Protection to about minus 37 requires roughly a 50 percent glycol concentration. Adding water dilutes the mix and raises the freezing point, while inhibitors and a thermostat do not change freeze protection. Draining some coolant and topping up with the specified antifreeze raises the glycol percentage correctly. Retest after mixing to confirm the new reading.

64. B — Milky oil is an emulsion of water and lubricant, which means water has entered through a damaged seal, vent, or fill plug. The oil, bearing, and seals need service. High temperature darkens oil, synthetic oil stays clear, and a loose bearing does not turn the oil milky. Replace the seal and drain, flush, and refill the hub.

65. A — A thermistor sensor with an open circuit gives the ECM the highest signal, which it interprets as the coldest temperature, often minus 40. A short to ground would show a very high temperature, and coolant level or battery voltage do not give this fixed reading. Plug the sensor in and measure its voltage with a meter.

66. C — A weak cap lets the system pressure drop below specification, which lowers the coolant boiling point so steam forms and coolant is expelled earlier. A weak cap does not make the engine run cold or raise heater pressure, and a cap that opens early does not stop coolant circulation. Replace the cap during the cooling service.

67. D — The warning is triggered by a pressure switch in the service reservoir circuit, so the switch and its wiring are tested first by bleeding the pressure and checking continuity at the switch. A governor, dryer purge valve, or slack adjuster does not operate the warning signal and will not explain a silent lamp and buzzer.

68. D — An automated manual transmission has no pedal, and its controller learns where the clutch begins to engage. A new clutch changes that point, so the touch-point calibration must be run with the scan tool or the truck will launch or shift roughly. Pedal free play does not apply. Skipping it risks poor engagement and jerky launches.

69. B — A water test with a person inside watching with a light follows the path of the leak to its point of entry, often a damaged seal or drain. Hosing the engine, testing the cooling system, or measuring a door lock voltage does not show where water enters the cab. Replace the damaged seal once found.

70. C — Frost at the orifice with low side vacuum and a weak high side shows refrigerant cannot pass, so a plugged tube or filter restricts flow. Overcharge raises both sides, a fast compressor does not cause vacuum, and a normal condenser fan gives normal readings. Replace the plugged tube and filter, then evacuate and recharge by weight.

71. A — A closed switch should drop only a few tenths of a volt at most. Two volts across the contacts means they are worn or burned, and power is being lost as heat. Replacement restores the circuit. A normal switch does not drop that voltage, and overcharge would not cause it.

72. C — Air suspension holds the vehicle at height with air in the springs, so a slow leak in a bellows or a leaking height control valve on the low side lets that corner drop. Steering, charging, and clutch components do not affect the ride height of a parked truck. Check the bag, fittings, and valve for leaks.

73. B — A thermostat stuck open lets coolant bypass the warm-up stage, so the engine runs cool, heater output is weak, and the ECM enriches fuel. A thermostat stuck closed would overheat the engine, and a slipping impeller also causes overheating, not an overcooled engine. Replace the thermostat and refill the coolant to restore normal operating temperature.

74. D — With the brakes applied, the chamber holds air pressure, so bubbles at the clamp ring or vent show a leaking diaphragm or clamp. Compressor lines, dryer cartridges, and ABS sensors are not found by soaping the chamber with the brakes applied and are tested differently. Brake chambers are checked this way at each inspection.

75. A — A clunk when load changes direction points to free play in the driveline, which is typically a worn U-joint cross or a loose yoke or slip spline. Injectors, battery cells, and radiator cores do not produce a mechanical clunk linked to torque reversal. Check the slip joints for play by hand with the shaft supported.

76. C — Metric property class numbers rise with strength: the first number shows tensile strength in hundreds of megapascals and the second shows the yield ratio. Class 12.9 is stronger than 10.9, 9.8, or 8.8, which is why it is used where the highest clamping loads are required and manufacturers specify it.

77. A — The emergency relay valve on the trailer applies the spring brakes when supply is lost and releases them when supply returns. If it sticks, the brakes remain applied. A dryer purge valve, a low-pressure switch, and a steering relief valve are not part of the trailer brake release circuit. Replace or clean the valve.

78. B — Milky oil is a mixture of water and oil. Water can enter through a damaged breather, seal, or cooler. The source should be repaired and the fluid and filters replaced. Additives do not cause milkiness, air bubbles separate quickly, and wear metals appear as glitter or dark particles. Test for water with a crackle test on a hot plate.

79. D — A thermal or load-sensing flasher expects a certain load. LEDs draw far less current, so the unit senses a failed bulb and flashes fast. A load resistor or an electronic flasher fixes this. A high-current draw would slow the flasher, and a backward installation would not change the rate. Fit a load resistor or electronic flasher.

80. B — A new spring can shift the axle position, so tracking, thrust angle, and U-bolt torque must be verified, with retorquing after the spring settles. Oil grade, belt tension, and washer pressure are unrelated to the suspension repair and cannot confirm the axle is square. Torque the U-bolts evenly in a crisscross pattern to specification.

81. A — Milky oil with falling coolant points to coolant entering the lubrication system, and an internal cooler core leak is a common source because the pressure test may hold when the engine is off. Fuel dilution does not look milky, and turbocharger or compressor leaks do not mix coolant into the oil.

82. D — An intermittent fault over bumps suggests a loose connector, pin, or wire. A wiggle test with the circuit monitored finds the point. Replacing the ECM first wastes money if the fault is a connector, and alternator output or coolant have nothing to do with a bump-sensitive power loss. Repair loose pins or damaged terminals found.

83. C — The stamped discard diameter is the maximum safe wear dimension after which the drum has less metal to absorb heat and resist cracking. A drum at that limit must be replaced. Turning more, using thicker linings, or relying on a visual check can leave the drum too thin to work safely.

84. C — A vibration that begins after driveshaft service often means the yokes are out of phase or the shaft is not seated, so alignment marks and runout are checked first. Coolant, steer tire tread, and reservoir pressure do not create a speed-related vibration after driveshaft reinstallation. Also check for dropped phasing or mounting errors.

85. B — Battery chemistry slows in the cold, so the battery management system limits current to protect the cells until they warm. It is a normal protective action. A permanent inverter failure would set a fault, and cable length and tire pressure do not limit battery power. The pack returns to full output as it warms.

86. D — Rubber bushings should be neutral at ride height. If tightened with the suspension hanging, they are twisted when the weight returns, which shortens life and affects ride and handling. Ride height does not change the thread effort or torque requirement, and it does not affect shock leakage. Ride height is the neutral position for rubber.

87. A — Low boost with black smoke means the engine is not getting enough air for the fuel supplied. With a clean filter, leaks in the cooler, piping, or clamps are the most common cause and are quick to find with a pressure test. Fuel return leaks, valve lash, and thermostat behaviour do not typically cause this pattern.

88. B — The drier holds desiccant that removes moisture, and opening the system exposes it to humid air so it saturates. Moisture then causes acids and freezing. The drier does not add refrigerant, lubricate the compressor, or pre-cool the refrigerant, so replacement is the standard practice. Always replace it when the system has been open for service.

89. C — Resistance equals voltage drop divided by current, so 0.35 volts divided by 280 amps is 0.00125 ohms, or 1.25 milliohms. The other values come from multiplying the quantities, mis-placing the decimal, or inverting the ratio, and none match the numbers in the problem. Such a value is normal for a heavy cable carrying cranking current.

90. D — A caliper must slide freely on its pins to centre itself over the rotor. A seized pin leaves one pad pressed against the rotor, causing drag, heat, and uneven pad wear. It does not change reservoir pressure, compressor loading, or improve axle brake balance. Clean and lubricate the pins with the correct grease when reassembling.

91. A — A groove worn by the old lip leaves a rough seal surface, so a new seal alone will leak again within a short time. Replacing the yoke or fitting a wear sleeve restores a smooth running surface. Sealant, sanding, or a lower fluid level only hide the problem and leave the seal damage to return.

92. A — Each leg carries half the load, 400 kg, as the vertical component. Tension equals that vertical share divided by the sine of the sling angle, so 400 divided by 0.707 gives about 566 kg per leg. The shallower the angle from horizontal, the greater the tension, so the sling must be rated above the vertical share.

93. B — A height control valve admits or releases air based on the linkage position, so a stuck or misadjusted valve can hold the trailer low despite proper supply. A kingpin, a reefer fuel filter, and hub oil do not control suspension height. Check linkage length, bushings, and the exhaust solenoid before replacing the valve.

94. C — Heat in a hydraulic system comes from pressure drops across restrictions. A relief valve that stays open or a blocked cooler converts power to heat. A reservoir at the correct level, a new filter, and a proper hose do not generate heat or block the cooling. Check relief pressure and cooler airflow first.

95. D — A turbo that starved of oil will fail again if the cause remains. The supply line and drain must be clear, and the new unit pre-lubricated before the first start. Lowering boost, shortening the exhaust, or removing the air filter does not address the oil problem and can cause new damage.

96. C — Diagonal measurements on a square frame should match within a small tolerance. A 15 mm difference shows the frame has been pushed out of square, which needs to be corrected to restore alignment. A kingpin or heat does not explain the difference in diagonal measurements. Frame repairs follow the manufacturer's alignment specifications and tolerances.

97. A — A seat that sags is losing air, so soapy water on the bag, fittings, and valve shows bubbles at the leak. Replacing foam, raising pressure, or welding the frame does not fix an air leak, and higher pressure can damage the bag. Replace the bag or fitting that bubbles and check height after refilling.

98. B — An ohmmeter injects its own small current, so external voltage disrupts the measurement and can damage the meter or the circuit electronics. Resistance and continuity tests need the circuit de-energized. Powered circuits are tested with a voltmeter instead. Use a voltmeter or test light for live circuits, and measure resistance only after disconnecting power.

99. D — The governor signals the compressor to unload at cut-out. If pressure keeps rising until the safety valve opens, the governor or unloader line is not working. A leaking spring brake chamber lowers pressure, and a battery or radiator hose fault does not control compressor unloading. Check the governor and the unloader line for leaks.

100. A — Bearing preload is a controlled load that removes clearance, and too much of it increases friction and heat, shortening bearing life. Tight preload does not add backlash or cool the axle, and it is not a quiet-running benefit. The adjustment must follow the manufacturer's specification. Set preload with a torque-to-rotate measurement after assembly.

101. D — A partly loaded filter that cannot regenerate on short trips is cleaned by commanding a stationary or forced regeneration through the scan tool, once the root cause is addressed. Drilling the filter destroys it, clearing codes does not remove soot, and an idle jumper does not meet the temperature needed for regeneration.

102. C — An always-on device draws power when the truck is parked, so it should be supplied from a switched circuit or one that supports a sleep mode. Charging often masks the issue, a larger fuse adds risk, and extra alternators do not reduce parked draw, so rewiring is the correct repair.

103. B — Frame rail flanges carry the highest stress, and drilling or heating them creates crack starters. Manufacturers allow holes only in specific web locations. Holes in the flanges, or random hole placement, can lead to a cracked frame regardless of deburring. Check the repair manual for approved locations before drilling any hole in the rail.

104. B — DEF is specified at 32.5 percent urea, and a reading near 22 percent shows dilution or contamination. This can cause poor NOx conversion and codes, and the system should be drained, flushed, and refilled with fresh fluid. Freezing does not change concentration, and a 10 percent variation is not allowed.

105. A — A coil that reads open cannot produce a magnetic field even with power present, so the winding must be replaced. Refrigerant charge, blower resistors, and evaporator flushing are unrelated to a clutch coil that fails the resistance test. Measure coil resistance with the clutch connector unplugged and compare it with the specification.

106. D — Oil coats the desiccant and stops it absorbing moisture, so the cartridge must be replaced. The oil came from somewhere, usually a worn compressor passing oil, and that source must be fixed or the new cartridge will fail again. Baking or adding beads does not restore a contaminated cartridge. Repair the oil source too.

107. C — A plugged breather lets heat build pressure inside the housing, which pushes oil past the wheel seals toward the brakes. Cleaning the breather and replacing the seals corrects it. Oil viscosity, a chamber diaphragm, and wheel nut torque do not explain the pressure that forces the oil past the seals.

108. C — A 5-volt reference that reads near zero at the sensor is being pulled to ground, either by a wire chafed against the chassis or by a shorted sensor sharing the line. Unplugging sensors one at a time shows which branch pulls it down. An open wire would leave the sensor unpowered, and battery terminals cannot change the reference level.

109. A — A loose plate with fretting shows the fasteners have lost clamp load and the parts are moving. The mounting must be inspected for cracks, worn components replaced, and fasteners torqued to specification. Grease, welding without approval, or oversizing holes weakens the mounting and is not acceptable. Replace the cracked bracket and use new fasteners.

110. D — A cylinder holds high-pressure gas, and a snapped valve can turn it into a projectile. Closing the valve, fitting the cap, and securing it upright on a cart prevents damage. Rolling, lying flat with a regulator, or carrying it by the valve each risk valve damage or a dropped cylinder.

111. B — An iced evaporator blocks airflow, so a defrost cycle is run first and the defrost sensor and termination are checked to find why ice built up. Adding refrigerant, shutting doors, or changing tires does not clear ice or explain it. Check the defrost sensor and heater element so the ice does not return quickly.

112. C — A hose must withstand the highest pressure of the circuit, including shocks, with an adequate safety factor. A short hose is not an exception, flow rate affects size but not rating, and good tightening does not strengthen a hose that is rated too low for the system. Check the hose markings for the pressure rating.

113. A — Wax crystals in summer-blend fuel plug the filter in severe cold, so the filter should be replaced, the fuel replaced or treated with an approved winter blend, and the system warmed. Adding gasoline is dangerous and damages injectors, and idling or changing the return line does not dissolve wax already formed.

114. B — Lamps need a good ground to complete their circuits. With a poor trailer ground, current finds another path through lamp filaments of other circuits, so unrelated lamps glow. Alternator output, brake chambers, and dryers do not cause cross-lighting of the trailer lamps. Repair the ground connection and clean the pins in the seven-way plug.

115. D — Lining friction differs by material, so mixing materials on one axle produces unequal torque and a pull under braking. Linings should be replaced in axle sets with the same specification. Compressor output, other axle adjusters, and ABS memory do not explain a pull after a lining change on one axle.

116. A — The inter-axle lock forces both drive axles to turn together, which helps on slippery surfaces but causes wind-up and tire scrub on dry pavement or in turns. It is engaged when traction is lost and straight-line driving, and released after. Leaving it on or using it in sharp turns risks driveline damage.

117. D — A tire pressure system tracks sensors by position, so a rotation requires a relearn using the scan tool or procedure. The lamp may remain until it is done even though the pressures are correct. Replacing stems, adding nitrogen, or changing the transmission schedule does not update sensor positions. Follow the manufacturer's relearn steps exactly.

118. C — An electric truck has no alternator, so its 12-volt battery is kept charged by a DC-DC converter fed from the high-voltage pack. If the converter fails, the 12-volt battery discharges. There is no belt, fuel filter, or turbocharger in a battery electric drive. Measure its output voltage and check the high-voltage supply and its fuses.

119. B — Common-rail fuel can reach over 1,500 bar and injures skin if released, so the engine must be off and the system allowed to bleed down as the manufacturer directs. Loosening a fitting while idling or cranking, or revving the engine, exposes the technician to high-pressure fuel spray. Wear eye protection when relieving any pressure.

120. D — Some faults, such as a corroded terminal or a few broken strands, pass a small meter current but not a heavy load. A voltage drop test with the circuit operating shows where voltage is lost under real conditions. It does not remove the need for a meter or guarantee low readings.

121. B — Urethane adhesive cures to a strength that holds the glass to the cab, and the windshield contributes to structural stiffness and to the backing for airbags. Driving before the safe drive-away time

risks the glass shifting. Glass does not need cooling, and wipers and defrosters are not the reason. Follow the adhesive's stated cure time.

122. A — Pulling the parking valve exhausts air from the spring chambers, so a restricted exhaust makes them apply slowly. Fast release, normal service brake release, and a warning lamp turning off at normal pressure are normal behaviours and do not indicate a restricted exhaust in the parking circuit. Inspect the dash valve exhaust port for blockage.

123. C — Rattle in neutral that stops when the pedal is pressed comes from parts driven by the clutch shaft while the engine runs, which are the input shaft, countershaft bearings, and gear teeth. A release bearing makes noise when the pedal is pressed, an output yoke turns only with road speed, and a ring gear is not part of the transmission.

124. B — A sidewall bulge means cords in the casing are broken and the tire could burst. It cannot be repaired and must be removed from service. Patching, reducing pressure, or waiting leaves a damaged tire on the road, which is unsafe and does not meet inspection requirements. Casing damage is a safety and legal defect.

125. D — A compression brake relies on oil pressure to the master and slave pistons and correct slave lash to open exhaust valves near top dead centre. With solenoids electrically correct, low oil supply or wrong lash is the likely reason for weak braking. Alternator, fuel filter, and coolant sensor do not drive the brake.

126. A — A vacuum hold test pulls the system down, then isolates it and watches the gauge. A rising reading shows air or moisture entering or boiling, indicating a leak or contamination. Adding refrigerant to find leaks vents it, and idle speed or oil level checks do not prove tightness. A rising gauge needle shows a leak.

127. C — A relay needs enough voltage to stay closed. When a load collapses the battery voltage, the coil drops out, closes again, and chatters. A discharged battery or poor connection is the cause. Overcharging, a seized compressor, and a coolant leak do not make a relay chatter. Charge the battery and test its connections first.

128. D — Mentoring means explaining the task, demonstrating it, observing the apprentice, and giving specific feedback. Stopping the unsafe work corrects the behaviour immediately and calmly. Silence, waiting for a near miss, or sending the apprentice away leaves the unsafe habit in place and fails the journey person's responsibility. Mentors teach by correcting calmly and demonstrating the right method.

129. A — Kingpin gauges show whether wear has reduced strength or locking security. Beyond the limit, the kingpin or upper coupler must be replaced. Grease does not restore metal, and welding or machining it deeper weakens the pin and risks uncoupling in service. Compare the pin with the gauge, then examine the upper coupler plate for cracks.

130. B — Pumps are designed for one direction of rotation, and running one backward prevents proper suction and can blow the shaft seal. The pump produces little flow. Higher efficiency or lower noise

does not occur, and not every pump can be run in either direction. Check the pump rotation arrow before it is coupled to the PTO.

131. C — Return springs pull the shoes away from the drum when air is released. If a spring is weak or broken, the shoes can stay in light contact, so the brake drags, overheats, and wears unevenly. It does not raise chamber pressure, disable ABS, or change how often the compressor loads.

132. D — Wheel speed is engine speed divided by the axle ratio: 1,500 divided by 3.55 is about 423 rpm. Multiplying by 3.2 metres gives about 1,352 metres per minute, and multiplying by 60 and dividing by 1,000 gives roughly 81 km/h. The other speeds come from incorrect ratio or unit handling.

133. B — Shimmy that begins after a tire change suggests a runout or balance issue. A dial indicator on the rim measures radial and lateral runout and shows whether the wheel or tire is out of true. Coolant, rail pressure, and alternator ripple do not describe wheel shape. Then balance the wheel and tire assembly.

134. A — A high-pressure pump cannot build rail pressure without adequate low-pressure supply, so supply pressure and filter restriction are checked first because they are cheap to test and common causes. Replacing the pump or injectors, or reflashing the ECM, is premature before supply is confirmed. Test fuel supply pressure with a gauge before any parts replacement.

135. C — Many modern trucks use smart charging, where the ECM varies alternator output to manage battery state, fuel use, and load. Voltage that varies within a normal range is therefore not a fault by itself. Replacing parts without checking the strategy wastes time and does not fix a normal condition. Check the scan tool for charging commands.