

PRACTICE EXAM 6: 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 load tests a battery rated at 1,000 cold cranking amps (CCA) using the common half-CCA method. What load, in amps, should be applied for 15 seconds?

- A. 250 A
- B. 1,000 A
- C. 750 A
- D. 500 A

2. A mixer truck with 640,000 km shows blue-grey smoke at cold start that clears once warm, and uses 1 L of oil per 1,600 km. Compression and cylinder leakage tests are normal. What is the most likely cause?

- A. Worn piston rings that leave low compression readings across all cylinders
- B. A leaking head gasket allowing coolant into the combustion chambers
- C. Worn valve stem seals allowing oil to be drawn into the cylinders overnight when cold
- D. A stuck-open thermostat holding the engine well below its normal operating temperature all day

3. A mixer truck has excessive free play at the steering wheel before the front wheels move. What should be inspected first?

- A. Loose steering gear mounts, worn tie rod ends, and loose column joints
- B. The tread depth on the rear drive tires, since they affect steering free play

- C. The air dryer cartridge, since it controls steering response and pump pressure
- D. The clutch pedal free play, since it feeds the steering gear box

4. A refuse truck builds air slowly, and the air dryer purge discharge is heavy with oil. The compressor discharge line feels hot and is badly carboned. What is the most likely cause?

- A. A leaking governor that is cutting out the compressor at too high a pressure
- B. An open drain valve on the wet tank letting pressure leak out slowly overnight
- C. A purge valve stuck open on the dryer that is exhausting the supply air
- D. Compressor oil passing into the air system from worn rings or a restricted inlet

5. A manual-transmission mixer truck has no clutch pedal free travel, and the clutch slips when hot under load. What is the most likely explanation?

- A. The release bearing is riding on the fingers because the linkage is out of adjustment
- B. The clutch brake is worn and is dragging the input shaft whenever the pedal is released
- C. The flywheel is too smooth and needs to be resurfaced to increase its friction
- D. The transmission oil is too thick and prevents the input shaft from turning freely

6. A tandem dump truck is in the shop for a hoist cylinder seal job. The box is raised and the technician must crawl underneath to reach the cylinder base pin. What must be in place before any work starts under the body?

- A. The hoist cylinder fully extended with the PTO engaged to keep pressure holding the box up
- B. The dump valve lever tagged in neutral while the engine idles to maintain system pressure
- C. A rated mechanical body prop or safety support installed, with the hoist control locked out
- D. Wheel chocks on the rear tandem axles and the parking brake applied by the driver

7. A trailer's landing gear will not crank down under load, though the handle turns. The gear box feels dry. What is the most likely issue?

- A. Excess pressure in the trailer air tank pushing the legs upward
- B. Stripped or worn gears inside the landing gear gearbox, due to dry lubrication
- C. A worn kingpin that stops the legs from extending properly
- D. A seized wheel bearing that holds the trailer at a fixed height above the ground

8. A hydraulic dump circuit has a cylinder with a 125 mm bore, and the system pressure is 12 MPa. What is the approximate extending force of the cylinder?

- A. 147 kN
- B. 74 kN
- C. 294 kN
- D. 118 kN

9. A snow plow truck's batteries are dead after a weekend. The shop wants to measure parasitic draw. How should the meter be connected and when should the reading be taken?

- A. Across the battery terminals, immediately after switching off the ignition and closing the door
- B. In series with the positive cable, with the engine running at a steady idle speed
- C. In series with the negative cable, after all modules have gone to sleep
- D. Across the starter solenoid, after cranking the engine for ten seconds to wake the modules

10. During a cylinder leakage test on a dump truck engine, air can clearly be heard escaping from the crankcase breather. Which fault does this indicate?

- A. A leaking exhaust valve letting air flow out through the tailpipe or exhaust manifold
- B. A leaking intake valve letting air escape back through the air intake duct
- C. A failed head gasket between the cylinder and the coolant passage, bubbling the radiator
- D. Worn piston rings or cylinder wall allowing air past the piston into the crankcase

11. A truck's cab heater blows cool air while the engine is at normal temperature. Both heater hoses are cool. What is the most likely issue?

- A. A stuck-open thermostat that sends the heat to the radiator instead of the heater
- B. A closed heater valve or plugged heater core that blocks coolant flow
- C. A weak refrigerant charge that lowers the heater output and the blower speed
- D. A failed compressor clutch that cools the incoming air before it enters the cab

12. The power steering fluid on a dump truck is foamy, the pump is noisy, and the reservoir level is low. What is the most likely cause?

- A. Too high a pressure setting on the steering gear relief valve in the system
- B. Worn front tires that put extra load on the steering pump and aerate the fluid
- C. Air entering the system through a suction-side leak, or a low fluid level
- D. A plugged radiator that is overheating the hydraulic fluid and causing it to foam

13. A technician performs an air brake leakage test on a dump truck by applying the service brakes fully with the engine off and the system charged. What is measured?

- A. The drop in system pressure over one minute compared with the vehicle's limit
- B. The time needed for the governor to cut in from the cut-out pressure
- C. The pressure at which the low-air warning device turns on as the air bleeds down
- D. The speed with which the air compressor recovers after all brakes are released

14. A dump truck's engine speed rises when pulling a heavy load, but road speed barely changes. The pedal has correct free play. What should be suspected?

- A. A broken clutch brake that has locked the transmission input shaft
- B. A worn or oil-contaminated clutch disc that can no longer transmit full engine torque
- C. A low level of oil in the rear axle that is reducing the road speed
- D. A leaking front seal on the water pump allowing the engine to rev freely

15. After tilting the cab of a mixer truck back down, the cab-lock indicator shows unlatched. What is the correct action?

- A. Drive carefully at low speed because the cab mounts will hold the cab
- B. Press the cab down by hand and rely on the dash warning to turn off
- C. Add grease to the pivot pins and assume the lock will engage on its own
- D. Do not drive it; inspect the latch and lock bars for alignment, damage, or obstruction

16. During cranking, a technician measures 0.8 V drop across a starter cable and its connections, with a current of 400 A. What is the resistance of that part of the circuit?

- A. 0.02 ohm
- B. 0.0005 ohm
- C. 0.002 ohm
- D. 0.2 ohm

17. A 2014 vocational truck with an older engine arrives for an oil change. The fleet stocks API CK-4 15W-40 and API FA-4 10W-30. Which is correct?

- A. API FA-4 10W-30, because lower viscosity always improves cold starting in older engines
- B. API FA-4 10W-30, because the newer category is approved for all earlier heavy-duty engines
- C. Either one, since the viscosity grade is the only specification that matters
- D. API CK-4 15W-40, which is backward compatible with engines built before 2017

18. Before servicing a high-voltage component on a battery-electric coach, which sequence is correct?

- A. Switch off, remove the key, open the service disconnect, wait the specified time, verify zero volts
- B. Switch off, wait one minute, and begin work on the components since the vehicle is shut down
- C. Disconnect the 12 V battery only, because that battery controls all the vehicle systems
- D. Touch the orange cables with insulated gloves to check whether any voltage is present

19. When adjusting an integral power steering gear, at which position is the sector shaft adjustment typically made?

- A. At full left lock, where the gear has the greatest clearance
- B. At the centre position, where wear is highest and the adjustment is tightest
- C. At full right lock, where the relief valve is open
- D. At any point of travel, because the clearance is the same everywhere along the sector

20. A mixer truck's parking brakes will not release even though the gauges show full air pressure at the control valve. What should be checked first?

- A. The wear of the brake linings, since worn linings prevent the brake from releasing
- B. The compressor discharge line, since carbon buildup always locks every spring brake on the axle
- C. The slack adjuster stroke, since excess stroke keeps the spring brake held applied
- D. Air reaching the release port of the spring brake chambers and their supply lines

21. When is it correct to use the clutch brake on a heavy-duty manual transmission?

- A. On every upshift while the truck is moving, to help match the engine and road speeds
- B. Only when stopped, pressing the pedal to the floor to engage first gear or reverse
- C. On every downshift to slow the engine and avoid the need for double clutching
- D. While rolling down a grade to help the truck's service brakes hold the speed

22. A truck's voltmeter shows 12.3 V with the engine running at fast idle and lights on. What is the most likely conclusion?

- A. The charging system is normal, since 12.3 V is the proper charging voltage
- B. The batteries are overcharged, since 12.3 V is above their resting level
- C. The charging system is not charging, so the batteries are supplying the load
- D. The alternator is overcharging and must be replaced immediately

23. An engine's oil pressure reads 80 kPa at hot idle and 380 kPa at rated speed. The oil level is correct and the filter is new. What is the most likely cause?

- A. Excess bearing clearance from worn crankshaft or connecting rod bearings
- B. A plugged oil pickup screen restricting flow at every engine speed
- C. A stuck-closed oil filter bypass valve starving the main gallery of flow
- D. A blocked oil cooler core that raises pressure at idle but drops it at high rpm

24. A technician fills a spray bottle from a 205 L drum of parts-washer solvent for use at the bench. Under WHMIS 2015, what must the bottle carry?

- A. Only a copy of the supplier pictograms drawn by hand, since the drum already carries all the details
- B. No label at all, provided the same technician uses the bottle for the whole of the shift
- C. A tag showing the date it was filled and the technician's initials for traceability
- D. A workplace label with the product identifier and safe-handling information, and the safety data sheet kept available

25. After a trailer is coupled, its brakes drag when the system is charged to full pressure. The tractor protection valve is open. What is the most probable cause?

- A. A relay valve or spring brake not releasing from a sticking valve or blocked exhaust port
- B. Trailer tire pressure that is too high to allow the brakes to release fully
- C. A lack of grease on the fifth wheel plate that restrains the trailer from rolling
- D. A low engine coolant level in the tractor that affects the trailer brake circuit

26. A hydraulic relief valve on a pump circuit is set far too high by a previous owner. What is the main risk?

- A. Lower flow from the pump, which makes the cylinders move more slowly
- B. Excess pressure that can burst hoses and damage seals, pumps, and cylinders
- C. Cooler fluid, since the pump does not do any work against the valve
- D. Reduced noise from the pump because there is less restriction

27. After an alignment, a truck pulls steadily to the left on a level road. The camber readings are equal side to side. Which setting is the most likely cause?

- A. Unequal rear axle ratios, with the left side having the lower numerical ratio
- B. Unequal tire sizes at the rear, with the left side being slightly larger overall
- C. Unequal caster, with the left wheel having less positive caster than the right
- D. Unequal brake chambers, with the left rear chamber being larger

28. A scope or meter in AC mode shows more than 0.5 V AC ripple on the output of a running alternator. What fault is most likely?

- A. A weak battery with a low state of charge and a dim cranking speed
- B. A failed rectifier diode or open stator winding in the alternator
- C. A loose belt that slips at high engine speed and under heavy load
- D. A faulty ground cable between the engine block and the chassis frame

29. A technician finds a cracked spring brake chamber housing on a dump truck. What is the correct repair?

- A. Replace the complete chamber assembly, never opening or disassembling the power spring section
- B. Remove the clamp ring, and replace only the cracked housing section with the spring held in place
- C. Cage the spring brake and weld the crack in the housing to seal it
- D. Drill out the crack ends and seal the housing using a metal-filled epoxy

30. A truck chatters and shudders when the clutch is engaged from a stop. Inspection shows oil on the clutch disc. What is the correct repair?

- A. Clean the disc with brake cleaner and refit it to the same pressure plate and flywheel
- B. Add a heavier gear oil to the transmission to calm the vibration felt at engagement
- C. Adjust the pedal linkage so that the clutch engages more slowly and smoothly from a stop
- D. Replace the disc and repair the oil source, such as the rear main seal

31. A dump truck overheats only on long loaded grades. Coolant level is full, the thermostat opens correctly, and the fan clutch engages. What should be checked next?

- A. Replace the water pump, since overheating at load always originates in the pump
- B. Flush the system with an acid-based cleaner before checking airflow
- C. External radiator and charge-air cooler fins for packed debris, and the fan shroud fit and seal
- D. Install a higher-temperature thermostat so the engine holds more heat in its coolant loop

32. An A/C system's sight glass shows constant bubbles, and the cab cools poorly. The compressor clutch cycles often. What is the most likely cause?

- A. Too much refrigerant, which should be vented to the atmosphere to relieve the pressure
- B. A blocked heater core, which should be flushed with coolant before further testing
- C. Low refrigerant charge, probably from a leak, which must be found and repaired before recharging
- D. A weak battery, which should be recharged on the truck before further testing

33. A voltage drop test of the alternator B+ cable, measured with the system under load, reads 0.9 V. What does this indicate?

- A. Excess resistance in the cable or its connections, which needs cleaning or repair
- B. The alternator is producing too much voltage and must be replaced with a new unit
- C. The battery has a bad cell and must be replaced immediately
- D. The reading is normal because every cable drops about one volt

34. A technician wants to repair a cracked frame rail on a dump truck. Which practice is prohibited by most manufacturers?

- A. Using a reinforcing plate fastened with approved bolts along the web
- B. Drilling holes or welding across the flanges of a heat-treated frame rail
- C. Cleaning and inspecting the crack before the repair begins and any metal is removed
- D. Following the frame manufacturer's repair instructions on weld type

35. A fleet adds green conventional coolant from a drum to a cooling system filled with extended life coolant (ELC). What is the likely result?

- A. There is no effect because every ethylene glycol coolant is fully interchangeable in any system
- B. Protection improves because the added silicates strengthen the extended life inhibitors in the mix
- C. Water pump seal life increases because conventional coolant contains more nitrite for the seals
- D. Incompatible inhibitors can gel or form deposits, so test the coolant and likely flush the system

36. A drive axle's automatic slack adjuster shows a pushrod stroke beyond the legal limit during an inspection. What is the correct approach?

- A. Find the cause, such as wear or a bent part, and repair it
- B. Back off the adjuster by hand to bring the stroke back under the limit shown
- C. Replace the brake drum since automatic adjusters need thick drums and new linings to work
- D. Increase the system air pressure to take up the extra stroke in the chamber

37. A 10-speed manual transmission jumps out of gear under load in one gear only. What is the most probable cause?

- A. Too much oil in the transmission pushing the gears out of mesh
- B. Worn gear engagement teeth, shift fork wear, or a weak detent in that gear position
- C. A bad clutch brake that is spinning the input shaft after the pedal is pressed
- D. A leaking range cylinder that shifts the whole transmission into the high range

38. A starter solenoid clicks rapidly and the headlights dim when the key is turned, but the engine does not crank. What is the most probable cause?

- A. A failed starter armature that is shorted to the engine block
- B. A blown fuse in the ignition switch feed to the instrument cluster
- C. A discharged battery or high resistance in the battery cables or terminals
- D. A faulty air compressor that is drawing excessive current

39. A cab on air suspension sits low at the rear and the ride is harsh on a vocational truck. The cab air bags hold pressure. What should be checked?

- A. The brake chamber pushrod stroke at the rear of the vehicle
- B. The engine thermostat housing for correct temperature opening
- C. The transmission input shaft seal for oil leaks at the bellhousing
- D. The cab height control valve and its linkage adjustment

40. How does a technician check a frame for sway or misalignment after a collision on a vocational truck?

- A. Measure the distance from the ground to the top of the frame at the rear only
- B. Weigh each axle with the truck empty and compare with the loaded weights
- C. Measure the diagonals between matching reference points and compare them against the manufacturer's tolerance
- D. Check the alignment of the headlights and the position of the grille

41. Before winter, a refractometer shows a truck's coolant protects only to minus 20 degrees Celsius, and the region sees minus 35. What is the best action?

- A. Drain some coolant and add concentrate to reach a 50/50 mix, protecting to about minus 37
- B. Add distilled water to improve heat transfer and let the mixture settle before the cold season starts
- C. Leave it alone because the engine block heater prevents any freezing damage to the cooling system
- D. Add a bottle of windshield washer fluid to lower the freezing point of the coolant further

42. A shop crane lifts a 900 kg mixer drive motor on two chain legs attached at a single hook. The technician wants to reduce the tension in each leg. Which change achieves this?

- A. Using shorter legs so the legs spread wider at the load attachment points
- B. Moving the lifting points closer to the hook to flatten the leg angle
- C. Fitting a higher-grade hook and shackle while keeping the same leg angle on the load
- D. Using longer legs so the angle of each leg from the horizontal becomes steeper

43. On a standard seven-way trailer connector, which function does the white wire carry?

- A. Left turn and stop
- B. Ground
- C. Right turn and stop
- D. Tail and clearance marker lights

44. A hydraulic cylinder on a refuse packer slowly lowers under load with the control valve in neutral. What is the most likely cause?

- A. Internal leakage past the piston seals or through a worn valve
- B. Excess hydraulic oil in the reservoir, which pushes down on the piston
- C. A restricted breather on the reservoir, which draws fluid out of the cylinder
- D. A cold engine, which thickens the fluid and forces the cylinder to move

45. A technician measures a brake drum on a dump truck and reads 422.4 mm. The drum is stamped 'discard 422.1 mm'. What is the required action?

- A. Reuse the drum, because only 0.3 mm over the stamp is within normal tolerance
- B. Replace the drum, because it has exceeded the stamped maximum diameter
- C. Machine the drum to a smoother finish and reuse it in the same position
- D. Install thicker linings to make up for the larger drum diameter

46. What is the correct way to check the oil level in a manual transmission with a side fill plug?

- A. Remove the drain plug and confirm that oil flows freely for ten seconds
- B. Fill the transmission until oil spills from the breather on the top of the case
- C. Run the engine in gear with the truck jacked up and read the level from the dipstick
- D. With the truck level, remove the fill plug and confirm oil reaches the bottom of the opening

47. A starter draw test on a diesel shows current much higher than specification and a slow crank. The batteries and cables test good. What is the likely fault?

- A. A defective alternator that is feeding a heavy current back through the starter and solenoid
- B. An open fuse in the starter solenoid control circuit that reduces the cranking power
- C. An internal starter fault such as worn bushings or a dragging armature
- D. A low-resistance ignition switch that sends far too much voltage to the starter motor

48. A vocational truck makes only 90 kPa of boost at rated load, against a normal 170 kPa, with black smoke. The air filter restriction is normal and the charge-air cooler passes a pressure test. What is the best next check?

- A. Replace the fuel filter in case low fuel pressure is limiting the power and the boost
- B. Exhaust leaks ahead of the turbine, and the turbocharger wheel and variable-geometry actuator condition
- C. Test coolant concentration to confirm that the freeze protection is adequate
- D. Inspect the diesel exhaust fluid tank level and the supply module

49. The A/C compressor clutch will not engage, though the system has power and the blower runs. Gauge pressures are both near zero. What is the likely reason?

- A. The heater control valve is open and prevents the clutch from engaging
- B. The engine oil level is too high and blocks the clutch control circuit
- C. The refrigerant charge is so low that the low-pressure switch blocks the clutch circuit
- D. The brake lamps are not working and the clutch circuit is therefore open

50. A mixer truck's frame crossmember bolts have been loose and show elongated holes. What is the correct repair?

- A. Repair or replace the crossmember and use specified bolts and locknuts, torqued correctly in sequence
- B. Fit larger washers beneath the bolt heads to cover the elongated bolt holes
- C. Weld the crossmember to the rails to stop all further movement for good
- D. Use shorter bolts so that they cannot loosen in the holes over time

51. How does regenerative braking in a hybrid or electric truck assist the vehicle's braking?

- A. The engine compression is increased, which burns more fuel to hold the truck back on grades
- B. The brake pads are pressed against the rotors with greater force and generate more heat
- C. The air compressor runs harder to store the braking energy in the air tanks
- D. The traction motor acts as a generator, slowing the truck and charging the high-voltage battery

52. A truck's ABS warning lamp stays on and a code shows an erratic signal from one wheel speed sensor at highway speed only. What is the most likely cause?

- A. A low charge in the air system reducing the supply to the modulator valve
- B. Worn brake lining on that wheel that changes the speed of the wheel
- C. A weak battery that lowers the voltage supplied to the tone ring
- D. Excess tone ring runout, damaged teeth, or hub bearing play altering the sensor gap

53. A range-shift transmission on a dump truck will not shift between low and high range, and there is no air movement at the range cylinder. What should be checked first?

- A. The clutch brake adjustment, since it controls how air gets to the cylinder
- B. The air supply to the range cylinder and the control valve and lines
- C. The rear axle ratio, because it limits the range available
- D. The oil level in the transmission, because it provides the pressure for the range

54. On a standard four-pin automotive relay, which terminals does the control coil connect to?

- A. Terminals 30 and 87
- B. Terminals 87 and 87a
- C. Terminals 85 and 86
- D. Terminals 30 and 85

55. A refuse truck on short stop-and-go routes keeps showing the particulate filter warning lamp. Which condition best explains this?

- A. Exhaust temperatures stay too low for passive regeneration, so soot builds up
- B. The DEF tank was overfilled, which blocks soot oxidation in the filter
- C. The coolant thermostat opens too late, which raises exhaust temperatures too high
- D. The engine air filter is too clean, which lets in excess oxygen and soot

56. A dump truck with an air suspension sits low on one side. The air springs hold air without leaks. What should be inspected first?

- A. The brake chamber pushrod strokes on the same side of the truck
- B. The height control valve and its linkage for adjustment, bending, or wear
- C. The air governor setting at the compressor
- D. The tread pattern of the tires on that side

57. A PTO circuit fuse on a dump truck blows repeatedly. A technician considers installing the next larger size. What is the correct approach?

- A. Use a larger fuse so that it can handle the surges from the pump
- B. Replace the fuse with a piece of wire so the circuit is protected
- C. Move the circuit to a different fuse that has a higher rating
- D. Find and repair the short or overload, then install the specified fuse size

58. A 1,200 kg compactor motor from a refuse body is lifted with two equal chain legs, each at 30 degrees above horizontal. What is the approximate tension in each leg, in kilograms-force?

- A. 1,200 kgf
- B. 600 kgf
- C. 693 kgf
- D. 2,400 kgf

59. A refrigerated trailer's unit shows a high discharge pressure alarm on a hot day. The refrigerant charge is normal. What should be inspected first?

- A. The trailer floor drain for blocked water flow in the cargo area
- B. The fuel tank cap for correct venting of the diesel supply
- C. The condenser coil for dirt or debris, and the condenser fan operation
- D. The landing gear for proper height of the trailer

60. A hydraulic pump on a PTO circuit is noisy with foamy fluid in the reservoir. The fluid level is low. What is the likely cause?

- A. Excessive temperature from a bad cab heater valve and a stuck blower
- B. A tire that is under-inflated on the PTO-driven truck and its hoist
- C. A plugged air dryer on the brake air system and its purge valve
- D. Aeration from low fluid or an air leak on the pump inlet

61. A plow truck's air tanks collect water daily even after drain valves are opened each morning. The dryer is five years old. What is the best action?

- A. Add alcohol to the system every day to prevent the moisture from freezing
- B. Replace the desiccant cartridge, and confirm the purge valve and heater work
- C. Install a larger compressor so the air moves through the dryer faster
- D. Remove the dryer so that moisture can leave the system through the tank drains

62. A refuse truck with an automatic transmission shows high fluid temperature after long low-speed stop-and-go work. The fluid level is correct. What should be checked next?

- A. The transmission cooler and lines for blockage, and the cooling circuit airflow
- B. The clutch brake adjustment on the transmission input shaft and the gear lash
- C. The air system pressure going to the transmission modulator valve and filter
- D. The ring and pinion backlash in the rear axle assembly and its bearings

63. On a dump truck, downstream NO_x remains high and DEF consumption is very low. A refractometer test of the DEF reads about 18 percent urea. What does this indicate?

- A. Normal DEF, because 18 percent is within the allowed range for cold weather
- B. A failed diesel oxidation catalyst that is wasting the urea before dosing
- C. Diluted or contaminated DEF that is well below the required 32.5 percent urea content
- D. A restricted fuel filter reducing the DEF injection pressure at the dosing valve

64. A leaf spring pack on a dump truck has a broken centre bolt, and the axle has shifted toward the rear. What does this cause and what is needed?

- A. Higher steering effort, requiring a new steering gear and a complete front end alignment
- B. Axle misalignment and tire scrub, needing a new bolt and the axle returned to its position
- C. Brake fade, requiring new brake drums on the shifted axle and fresh linings all round
- D. Poor engine cooling, requiring a new fan clutch to be installed and the shroud replaced

65. A technician repairs a damaged wire in a weatherproof harness on a refuse truck. Which method gives the most reliable repair?

- A. A twisted joint wrapped with electrical tape for insulation
- B. A butt connector of any type without sealing the ends
- C. A soldered or crimped splice sealed with adhesive-lined heat-shrink tubing
- D. A wire nut tightened over the spliced strands inside the harness

66. A truck parked overnight at minus 25 degrees Celsius shows a DEF level warning at start-up even though the tank was full. What is the most likely reason?

- A. DEF frozen in the tank, which coolant circulating through the heater must thaw before pumping
- B. The DEF is unaffected by cold, so the level sensor must have failed outright
- C. The DEF thickens at low temperature and must be diluted with water to flow properly
- D. The SCR catalyst absorbs the DEF when the exhaust system is cold and the engine is off

67. At the front of a trailer, which gladhand colour connects the trailer service (control) line, and which the emergency (supply) line?

- A. Red for service and blue for emergency supply
- B. Yellow for service and green for emergency supply
- C. Green for service and red for emergency supply
- D. Blue for service and red for emergency supply

68. Automatic transmission fluid on a vocational truck is dark, smells burnt, and a magnet on the drain plug carries fine metal paste. What does this indicate?

- A. A normal condition for fluid after 10,000 km, so only a fluid top-up is needed
- B. A sign of overfilling, which is cured by draining a small amount of fluid
- C. Internal wear or friction material damage, needing diagnosis and probably an overhaul
- D. A sign that the wrong filter was used, which a new filter will cure

69. A seat belt on a dump truck is frayed at the edge, and its retractor sticks. What should the technician do?

- A. Replace the seat belt assembly, because damaged webbing or a faulty retractor cannot be relied on in a crash
- B. Cut off the frayed section and reuse the belt after sealing the edge with a flame
- C. Lubricate the retractor with spray oil and return the truck to service the same day
- D. Leave it in place if the buckle still latches properly and the belt retracts

70. A technician must open a mobile A/C system to replace a leaking hose. How should the refrigerant be handled?

- A. Vent it slowly into the shop air since modern refrigerants are harmless
- B. Recover it with approved equipment, operated by a certified refrigerant technician
- C. Pour it into a container and reuse it without testing
- D. Burn it off using the shop torch away from the vehicle

71. A trailer's marker lamps dim and flicker whenever the stop lamps are applied. The seven-way connector looks clean. What is the most likely cause?

- A. A faulty brake light switch in the cab that sends too much current
- B. A tractor alternator producing excess voltage during braking
- C. A burnt-out bulb in the center high-mounted lamp
- D. A high-resistance ground path between the trailer and the tractor

72. A tandem dump truck's rear tires show feathered, scrubbed wear on the inside shoulders. Axle alignment is suspect. What component should be checked on a walking-beam suspension?

- A. The radiator hoses, since coolant flow changes the axle position under load
- B. The turbo oil feed line, since oil pressure positions the axle in the hanger
- C. Worn beam centre and torque rod bushings that let the axles shift
- D. The hydraulic hoist cylinder, since it changes the axle angles when the box rises

73. On a cold morning, a snowplow truck starts, then stalls after two minutes, and the fuel filter housing feels waxy. What is the most probable cause?

- A. Water in the fuel freezing at the injector tips only after the engine has stopped for hours
- B. Low engine oil pressure from over-thick oil closing the fuel shutoff
- C. A weak starter motor causing low cranking speed and low fuel pressure
- D. Fuel wax crystals plugging the filter because the cloud point is above the outside temperature

74. On a wet road, a loaded tandem dump truck pulls hard to the right during a service brake application. The tires and steering are normal. What is the most likely cause?

- A. Over-pressure in the right steer brakes caused by an air tank safety valve
- B. Weak or non-working brakes on the left side of the steer axle
- C. A worn right-hand tire that has too much grip for the truck

D. A leaking air dryer that cuts the pressure to the right-side brakes

75. A technician installs a new clutch in an automated manual transmission truck. What is required before the truck is returned to service?

- A. Perform the clutch touch point calibration routine with the scan tool
- B. Nothing, since the control module learns the new clutch automatically while driving
- C. Manually set the pedal free travel, since the transmission uses a clutch pedal
- D. Replace the clutch brake and the range cylinder before testing

76. A technician finishes tightening mixer drum roller bolts to 400 N·m with a click-type torque wrench. How should the wrench be stored?

- A. Backed off to its lowest scale setting so the internal spring is not left compressed
- B. Left at 400 N·m so the next user can confirm the last torque value applied
- C. Locked at its maximum setting so the mechanism is protected if it is dropped
- D. Set at the middle of its range with the lock ring loosened to relax the spring evenly

77. What is the purpose of the defrost cycle on a refrigerated trailer unit?

- A. To clean the condenser coil by blowing hot air across its fins
- B. To raise the cargo temperature to the maximum for loading
- C. To melt ice from the evaporator coil that restricts airflow and cooling
- D. To purge air and moisture from the unit's fuel system

78. A hydraulic return filter on a hoist system has a bypass valve. What does this valve do when the filter element is blocked?

- A. It closes so that no unfiltered oil reaches the components
- B. It opens so that oil still flows, though unfiltered, rather than starving the system
- C. It shuts down the pump until the element is replaced

D. It sends the oil back to the pump inlet to be cleaned again and again

79. A sensor circuit shows a 0 V reading at the sensor connector on the 5 V reference wire with the key on and the connector disconnected. What should be done next?

- A. Replace the sensor first, since a missing reference means the sensor has failed
- B. Add a resistor to the signal wire to raise its voltage up to the 5 V level
- C. Replace the battery, since the sensor depends on battery voltage for its supply
- D. Trace the reference wire toward the module for an open or short to ground

80. A shock absorber on a plow truck is wet with oil and has lost its damping. What is the best repair practice?

- A. Refill the shock with engine oil and reinstall it on the same axle
- B. Replace the shocks in axle pairs with units that meet the specification
- C. Remove the shock and run without it to save repair costs
- D. Replace only the shock bushings and leave the old shock in place

81. A common-rail engine on a mixer truck loses power under load. Actual rail pressure is far below desired, and low-pressure supply measures 120 kPa against a specification of 450 kPa. What should be addressed first?

- A. A restricted fuel filter or weak lift pump starving the high-pressure pump
- B. Replace all injectors, because low rail pressure always comes from leaking nozzles
- C. Replace the rail pressure sensor, since its signal is lower than commanded
- D. Increase the commanded rail pressure in the engine control module settings

82. With power off, a technician measures resistance between CAN high and CAN low at a truck's diagnostic connector and reads 120 ohms. What does this indicate?

- A. The network is healthy because 120 ohms is the expected reading for a good backbone

- B. The network has a short between the two wires and the whole bus is unusable
- C. One terminating resistor is missing or open, since the normal reading is about 60 ohms
- D. The data link is disabled until the ignition is switched on and the modules wake up

83. The safety valve on an air reservoir opens and vents at about 1,035 kPa while the compressor is running. What should be checked first?

- A. The spring brake chambers, because they release air into the tank at that pressure
- B. The brake drums, because they cause pressure increases from heat
- C. The low-air warning switch, because it controls the pressure inside the tank
- D. The governor and compressor unloader, since the compressor is not unloading on time

84. An automated manual transmission will not engage a gear, with a code for low air supply to the shift system. The air tank shows 800 kPa. What is the best next step?

- A. Check the air supply line, filter, and regulator for restriction or leakage
- B. Replace the transmission control module because the code is always a module failure
- C. Drain the transmission oil and refill with the heavier grade of oil
- D. Increase the tank pressure by adjusting the governor cut-out higher

85. An electric truck shows an insulation resistance fault code for its high-voltage system. What should the technician do?

- A. Clear the code and continue service, since insulation faults are quite common
- B. Bypass the isolation monitor so that the vehicle can complete the route home
- C. Follow the manufacturer's isolation fault procedure and test with an insulation resistance tester
- D. Spray electrical contact cleaner on all orange cables and connectors

86. During inspection of a fifth wheel, the technician finds the jaws do not fully close around the kingpin, though the release handle is in the locked position. What is the likely cause?

- A. Excess grease on the top plate, which pushes the jaws open slightly
- B. A worn kingpin or worn jaws, or a release mechanism needing adjustment
- C. Low tire pressure on the trailer, which changes the kingpin position
- D. A faulty trailer brake chamber, which prevents the jaws from closing

87. A water-in-fuel lamp comes on in a dump truck. What is the correct service step?

- A. Pour fuel additive into the tank and continue the shift because the lamp will clear
- B. Replace the engine oil filter because it also separates the water from the fuel supply
- C. Disconnect the sensor to stop the lamp and avoid a possible derate on the road
- D. Drain the water from the separator, then prime the system to purge air

88. After replacing a compressor in an A/C system, the receiver-drier is also replaced. Why is this required?

- A. The receiver-drier increases the refrigerant charge by changing the volume of the system
- B. The drier is a wear part with a fixed number of operating hours before it fails
- C. The new compressor will not run with the old drier installed in the circuit
- D. The drier's desiccant absorbs moisture and becomes saturated once the system has been opened

89. A dump truck's PTO will not engage, though the switch lamp lights. A scan tool shows the park-brake status input as 'not applied.' What is the likely reason?

- A. The module is waiting for enabling conditions such as the parking brake before it allows PTO engagement
- B. The PTO has failed internally and cannot be engaged until the whole unit is replaced
- C. The module has lost its software and must be replaced and then reprogrammed at a dealer
- D. The dash switch wiring has shorted to power and caused the indicator lamp to light

90. A dump truck's brake drums show many fine heat cracks across the friction surface after a long descent with repeated heavy braking. What is the proper repair?

- A. Turn the drums on a lathe to remove the cracks and reinstall the same drums
- B. Replace the cracked drums in axle sets and find the cause, such as a dragging brake
- C. Fit new linings only, since cracks in the surface do not affect braking
- D. Wash the drums with solvent to close the cracks before the next trip

91. A new driveshaft is installed on a dump truck and a vibration appears at highway speed. The old shaft had no vibration. What should be checked first?

- A. Transmission fluid level, since the new driveshaft needs higher oil levels
- B. Brake lining thickness, since new shafts can affect lining wear
- C. Yoke phasing alignment, joint working angles, and shaft balance of the replacement
- D. Tire tread depth, since the shaft vibration comes mainly from the tires

92. A new wheel-end oil seal is being installed on a refuse truck's drive axle. Which practice gives the longest seal life?

- A. Lip facing outward to keep road dirt out, tapped in with a hammer and a socket from the shop bench
- B. Lip facing the oil, driven in square with a proper seal driver, and the lip lightly lubricated first
- C. Lip left dry to avoid contaminating the oil, driven in with a drift working around one side only
- D. Seal bore coated with silicone sealant and the lip toward the brake to block lubricant

93. The sliding tandem on a trailer will not lock in position after an adjustment. The pins do not fully enter the holes. What is the most likely cause?

- A. Low tire pressure on the tandem, which raises the floor of the trailer slightly
- B. A worn kingpin that prevents the tandem from moving at all along the slider rails
- C. Bent or misaligned pins or a seized release mechanism that keeps the pins from fully extending
- D. A blocked trailer air line that affects the trailer's ABS and the slider lock

94. A technician fits a new hydraulic hose assembly on a mixer truck and routes it in a tight loop against a sharp edge. Which risk does this create?

- A. Early failure from kinking, abrasion, or exceeding the hose's minimum bend radius
- B. Lower system pressure since the hose is longer than the original one in the circuit
- C. Faster hydraulic fluid flow because a bend increases the velocity
- D. Improved cooling because the hose has a larger surface area

95. An engine derates and logs SPN 100 FMI 1, which means oil pressure data is valid but extremely low. What should the technician do before replacing the sensor?

- A. Replace the oil pressure sensor, since FMI 1 always means a sensor failure
- B. Clear the code and road-test, because FMI 1 is only a temporary fault
- C. Erase the stored data and reprogram the engine control module with the latest software
- D. Verify engine oil level and measure actual oil pressure with a mechanical gauge

96. A pintle hook on a vocational trailer hitch shows wear at the horn. What is the correct action when the wear exceeds the manufacturer's limit?

- A. Build up the worn area with welding and put the hook back in service
- B. Replace the pintle hook and check the lunette ring, since both wear together
- C. Keep it in service and add grease to the horn more frequently
- D. Reduce trailer weight to compensate for the lost thickness

97. Water drips onto the floor on the passenger side of a snow plow truck cab during rain. Door seals look intact. What should be checked next?

- A. The air compressor discharge for pressure leaks inside the cab
- B. The diesel exhaust fluid tank for overflow into the cab
- C. The clutch pedal bushings for water ingress from the engine bay or firewall
- D. The cowl and door drain holes and the windshield seal for leaks

98. A technician needs to measure the resistance of a sensor on a truck. Which precaution is essential?

- A. De-energize the circuit and disconnect the sensor from the harness before measuring resistance
- B. Measure with the ignition key on and the engine running to see the true value
- C. Place the meter in the voltage setting to read the sensor resistance
- D. Short the sensor terminals first to discharge any stored energy

99. The rear brakes on a mixer truck release slowly after the pedal is let go, while the front brakes are normal. Which component is the most likely culprit?

- A. The treadle valve, since it would delay all the brakes on the truck equally
- B. The air compressor, because it controls how quickly the brakes release
- C. A rear relay or quick release valve with a sticking piston
- D. The front brake chambers, since they pull on the rear chambers

100. A universal joint on a driveline has a dry, brown-stained cup and a seized needle bearing. What should be done?

- A. Soak the joint in penetrating oil and reuse it after it moves freely
- B. Pack the cup with high-pressure grease and continue in service
- C. Replace the joint, and confirm lubrication practice so grease reaches all cups at each service interval
- D. Cut off the seized cup and weld the yoke to hold the cross in place

101. In the J1939 fault code format, what does FMI 0 indicate?

- A. Data valid but above the normal operating range, at the most severe level
- B. Data erratic, intermittent, or incorrect from the sending device or sensor circuit
- C. Voltage above normal or shorted to a high source on the circuit
- D. Bad intelligent device or network, with no communication from the module at all

102. Two 6-ohm resistive loads are connected in parallel across a 12 V supply. What is the total current drawn from the supply?

- A. 2 A
- B. 1 A
- C. 8 A
- D. 4 A

103. A set of steer tires shows wear in the centre of the tread, while the shoulders are barely worn. What is the likely cause?

- A. Under-inflation, which makes the centre of the tread carry the load
- B. Over-inflation, which makes the centre of the tread carry the load
- C. Too much toe-in, which wears only the outer edges of the tread
- D. Too much camber, which wears the centre of the tire evenly

104. A dump truck's compression brake gives weak retarding on a long descent, although it engages. A check shows a slave piston lash clearance larger than specification. What is the correct repair?

- A. Increase the engine idle speed so the brake produces stronger retarding force on grades
- B. Replace the turbocharger to raise the air pressure in the cylinders on the brake stroke
- C. Leave the clearance wide to prevent the valves from hitting the pistons during braking
- D. Reset the brake lash to specification, at the required position for each cylinder

105. A truck's blower motor only works on the highest speed setting. All lower speeds are dead. What is the most likely component at fault?

- A. The cab air filter, which has become restricted with dust
- B. The blower motor resistor block or speed control module
- C. The compressor clutch, which has worn out its friction surface
- D. The thermostat in the engine cooling system

106. On a tandem dump truck, one S-cam brake has uneven lining wear and sloppy action. The camshaft has excessive end play and the bushings are worn. What should be done?

- A. Add washers behind the camshaft head to remove the end play permanently
- B. Increase grease pressure so that the bushings are forced to take up the wear
- C. Replace the worn bushings and seals, and set the camshaft end play to specification
- D. Replace only the brake chamber, since it controls the camshaft position

107. A drive axle whines on the coast but is quiet under power. What does this most likely indicate?

- A. A tooth contact or preload problem in the ring and pinion gears, checked with marking compound
- B. Low air pressure in the brake system that affects the axle rotation
- C. Low coolant that is reducing the lubrication in the carrier housing
- D. A worn clutch disc that is transmitting noise from the engine

108. A truck's engine control module will not power up. The dash is dead and no codes can be read. Which check should come first?

- A. Reprogramming the module with new software
- B. Replacing the module because it is the only part that can cause this
- C. Checking the transmission fluid level and condition
- D. Battery feed fuses, ignition feed, and the module's ground connections at the connector

109. A technician mounts a new tire on a dual wheel of a truck. What practice helps tire life and safe handling on the dual assembly?

- A. Mixing a new tire with a worn one so the pair share the load unevenly
- B. Inflating the inner tire to a higher pressure than the outer one
- C. Matching the tire diameters and keeping inflation equal on both tires of the dual pair
- D. Using different tire brands on a pair so that the wear patterns are varied

110. An apprentice plans to reuse torque-to-yield cylinder head bolts on a PTO-driven transfer-case repair because they 'look fine.' What is the best response from the journeyperson?

- A. Allow the reuse this once and raise the issue at the next monthly safety meeting
- B. Explain that stretch-type bolts are single-use and fit new ones
- C. Replace the bolts yourself without discussion so the job is not slowed down
- D. Have the apprentice clean the threads and add threadlocker to make up for the stretch

111. A trailer's ABS lamp flashes a code on startup. Which first step is typical for diagnosing a wheel speed sensor fault on the trailer?

- A. Check the sensor cable and connector, then measure the sensor resistance and the air gap
- B. Replace the trailer's air tanks since pressure affects sensor readings
- C. Disconnect the batteries of the tractor for one hour to reset the system
- D. Add oil to the trailer axle bearings to change the sensor signal

112. A hydraulic accumulator on a truck's hoist system needs its pre-charge checked. What gas is used, and when is the check made?

- A. Compressed shop air, with the system at full working pressure
- B. Oxygen, with the hydraulic oil still warm from operation
- C. Propane, with the system held at half of its working pressure
- D. Dry nitrogen, with the hydraulic system pressure fully relieved first

113. Which set of conditions is normally required before an engine compression brake will operate?

- A. Throttle fully pressed, engine at idle, clutch released, and the PTO engaged
- B. Parking brake applied, engine at idle, transmission in neutral, and the retarder switch off
- C. Throttle released, engine above minimum rpm, clutch engaged, and the control module enabling the brake
- D. Cruise control set, engine below minimum rpm, and the ABS system disabled

114. A fuel level gauge on a refuse truck always reads full. The sender is a variable resistor and the gauge shows full when resistance is high. What is the best test?

- A. Ground the disconnected sender wire to see if the gauge swings to empty, then test the sender and its ground
- B. Replace the gauge first, because the gauge is almost always the failed part in these circuits
- C. Fill the tank with fuel to the brim and watch whether the gauge needle moves at all
- D. Change the batteries so the gauge gets a higher supply voltage and a stronger signal

115. An ABS lamp stays on after start-up with a code for an open circuit at one wheel speed sensor. Which diagnostic sequence is best?

- A. Replace the ABS electronic control unit first, since open circuits always originate there
- B. Inspect the connector and harness flex points, then measure sensor resistance and continuity
- C. Disconnect every other sensor and then clear the code to see if it returns
- D. Add grease to the sensor body so that the signal strength increases

116. A tandem dump truck is leaving a slippery gravel pit. When should the driver use the inter-axle differential lock?

- A. Engage it permanently during all driving to keep the axles aligned
- B. Engage it only when the truck is at highway speed on dry pavement
- C. Engage it only when the truck is parked, to hold the load on a hill
- D. Engage it when traction is poor, and unlock it again once back on firm pavement

117. How should wheel nuts be tightened on a hub-piloted dual wheel after the wheels are installed on a truck?

- A. In a circular order, starting at the top, using an impact gun to the maximum force
- B. Randomly, as long as every nut ends up snug with a hand wrench
- C. In a star or criss-cross pattern in stages, to the specified torque, on clean threads
- D. Only the outer nuts, since the inner nuts do not carry any of the wheel load

118. An electric truck will not enter 'ready' mode, and the dash shows low 12-volt system voltage. The high-voltage battery is fully charged. What is the likely reason?

- A. The weak 12 V auxiliary battery cannot power the modules that close the high-voltage relays at start-up
- B. The high-voltage battery is too full and cannot accept any more charge from regeneration
- C. The transmission fluid is too cold, so the electric motor cannot start turning the driveline
- D. The air compressor has too much pressure in the system and blocks the ready mode

119. Before adjusting overhead valve lash on a six-cylinder engine in the shop, how should the piston of the cylinder being adjusted be positioned?

- A. At bottom dead centre on the intake stroke so the valves are fully open
- B. At top dead centre on the exhaust stroke so the exhaust valve is open
- C. At top dead centre on the compression stroke so both valves are closed
- D. At any position, since lash is the same all around the camshaft lobe

120. Before reprogramming a truck's engine module with a laptop, what is a necessary precaution?

- A. Disconnect the batteries so that the module can store the new software safely
- B. Connect a battery maintainer or charger so that voltage remains stable throughout the whole programming session
- C. Turn off the key and leave the doors open so the system can cool
- D. Start the engine and run it at high idle to keep voltage up

121. A windshield wiper on a truck moves slowly and stalls at the top of the wipe. The motor draws high current. What is the most likely cause?

- A. Binding or corroded linkage and pivots that load the wiper motor
- B. A broken thermostat in the cab heater that slows the motor speed
- C. A low charge in the air brake system that affects the wiper speed
- D. An overcharged battery that supplies too much voltage to the motor

122. A technician applies the service brakes and sprays soapy water around the brake chamber, finding bubbles at the chamber's breather hole. What does this show?

- A. A loose clamp ring on the spring brake section of the chamber
- B. A leaking fitting at the air line connection on the chamber
- C. Normal operation of the chamber, as air always escapes during an application
- D. A leaking service diaphragm inside the chamber

123. Gear oil is leaking from the pinion seal and axle shafts of a drive axle that has the correct oil level. What should be checked?

- A. The clutch pedal free play, since it controls the oil pressure in the axle
- B. A plugged axle breather that allows pressure to build inside the housing
- C. The air compressor output, since pressure from the compressor feeds the axle
- D. The coolant level, since the axle housing is cooled by the engine system

124. A drive axle hub shows oil leaking out of the hub cap and brake drum area, and the oil level looks high. What should be checked?

- A. The air dryer purge valve on the compressor and the governor
- B. The coolant overflow bottle level on the engine and the radiator cap
- C. The transmission shift tower linkage and boot at the cab floor
- D. The hub fill level, the vent, and the wheel seal

125. A refuse truck's hydraulic fan drive runs at full speed constantly, even when the engine is cold. What is the most likely cause?

- A. A fan control solenoid or temperature input fault that defaults the system to full fan speed for protection
- B. A thermostat stuck open, which forces the fan to run at maximum speed
- C. A slipping alternator belt, which drives the fan faster as it wears
- D. Low engine oil level, which causes the fan to maintain high speed to cool the oil

126. Windows on a truck cab fog up in cold weather and the defroster is weak. The heater works well. Which setting helps clear the glass most quickly?

- A. Recirculation mode with the heater on, to keep the air warm inside the cab
- B. Heater off and recirculation on, so that the cab warms through the glass
- C. Fresh-air mode with A/C on, to dry the incoming air while heating it
- D. Fan on low and vents closed, to save energy and prevent condensation

127. After a technician replaces incandescent turn signal bulbs with LED lamps on a truck, the signals flash very fast. What is the cause and the correct fix?

- A. The LED bulbs are too bright, so a dimmer must be fitted to the signal circuit
- B. The flasher reads the low LED current as a failed bulb; fit an LED-compatible flasher
- C. The batteries are overcharged, so the charging system needs to be repaired promptly
- D. The turn signal switch is worn out, so it must be replaced with a new unit

128. Hydraulic oil from a split hose ignites on a hot exhaust beneath a concrete mixer. Which extinguisher class is needed to fight this fire?

- A. Class A water-pressure unit to cool the exhaust and the burning hose
- B. Class B, such as an ABC dry chemical unit aimed at the base
- C. Class D powder unit made for combustible metal fires in the shop
- D. Class K wet chemical unit made for cooking oil fires in kitchens

129. A trailer wheel hub has dark, burnt-smelling oil and the bearing has overheated. What is the most likely cause?

- A. Excess air pressure in the tires that increases bearing loading
- B. Too much light on the trailer interior from the cargo lamp
- C. The gladhands being coupled in the wrong order on the trailer

D. Bearing adjustment too tight, or low or dirty hub oil, causing heat

130. A fleet finds hydraulic fluid with a milky appearance in the reservoir of a refuse packer. What does this indicate?

- A. Water contamination or entrained air in the fluid, which should be corrected
- B. Normal fluid ageing, which does not need any action unless the colour darkens further
- C. Fluid that is too cold, so it should be warmed to operating temperature before continuing
- D. The addition of too much anti-wear additive, which improves protection for the pump

131. A fleet manager asks how to shorten the delay between pedal application and brake chamber pressure on a long-wheelbase truck. Which air system component helps most?

- A. A larger diameter treadle valve fitted at the pedal in the cab to move more air
- B. A second governor installed at the compressor discharge line to speed up the air supply
- C. Relay valves mounted near the rear chambers, so air avoids the full line from the pedal
- D. A smaller air dryer that holds less air volume in the supply side of the system

132. A fleet's trucks have electric drive-line retarders that are not applying on grades, and the dash shows no faults. Which input should be verified first?

- A. The retarder enable switch and the control inputs such as pedal and ABS status
- B. The air dryer cartridge condition, since the retarder works through the dryer unit
- C. The valve lash of the engine, since retarders work through valve movement
- D. The fuel filter restriction, since the retarder uses diesel fuel

133. A technician adjusts the wheel bearings on a drive axle hub after a seal replacement on a refuse truck. Which sequence is correct for setting the bearings?

- A. Tighten the nut as far as possible with an impact gun and bend the lock tab over
- B. Leave the nut finger-tight so that the bearings can float and settle in service

- C. Seat the bearings by torquing the nut while turning the hub, back off, set final torque, lock
- D. Tighten the nut until the hub no longer turns and then back it off one full turn

134. When should a dry-type engine air filter on a vocational truck be replaced?

- A. Every time the engine oil is changed, regardless of the restriction reading
- B. When the restriction indicator reaches the engine manufacturer's specified limit
- C. Only when black smoke appears or the engine loses power under load
- D. After tapping it clean on a wall until the visible dust stops falling out

135. A technician is about to disconnect a battery cable while the engine of a modern truck is running, to check whether the alternator still charges. What is the problem with this practice?

- A. It removes the oil pressure from the engine and will stop it at once
- B. It reduces the compression of the cylinders and may bend a valve
- C. It resets the odometer and the stored service interval reminders
- D. Sudden loss of the battery's buffering can create voltage spikes that damage modules

Practice Exam 6: Answer Key and Explanations

- 1. D** — The common load test draws half the battery's CCA rating for 15 seconds, so a 1,000 CCA battery is loaded at 500 A, and its voltage should stay above roughly 9.6 volts at normal temperature. A load of 1,000 A would draw the full rating, which is twice the test current, and 250 A is only a quarter of it.
- 2. C** — Smoke at cold start that clears warm, with normal compression and leakage tests, points to hardened valve stem seals letting oil leak down the guides overnight. Worn rings would show poor compression and leakage and constant smoke. A coolant leak would produce white smoke and coolant loss, and a cold thermostat does not burn oil.
- 3. A** — Free play in the steering wheel is caused by looseness anywhere in the linkage, such as gear mounts, tie rod and drag link ends, or column joints, so these are inspected first before adjusting the gear. Rear tires, the air dryer, and the clutch pedal are unrelated to steering linkage clearance.

- 4. D** — Oil in the dryer purge and a carboned discharge line show the compressor is pumping oil, usually from worn rings or a restricted air inlet that pulls oil past the seals. The compressor must be repaired, and the dryer cartridge replaced. A governor or leaking valve changes pressure behaviour but does not push oil into the system.
- 5. A** — Free travel lets the release bearing clear the clutch fingers. With none, the bearing keeps partial pressure off the plate, so the clutch slips and heats up. Adjusting the linkage or hydraulics restores free play. A clutch brake only acts at the bottom of pedal travel, and smooth flywheels and oil thickness do not cause this.
- 6. C** — A raised dump body is gravitational stored energy, and hydraulic pressure can bleed down at any time, so a rated mechanical prop must carry the load before anyone goes under it. Locking out the control prevents accidental lowering or operation. Chocks and the parking brake only control vehicle roll, not the falling body.
- 7. B** — A handle that turns without raising or lowering the legs, with a dry gearbox, indicates stripped or worn gears inside the unit, a common result of poor lubrication and overload. The tank pressure, kingpin wear and a wheel bearing do not interfere with the crank mechanism and would not cause a free-turning handle.
- 8. A** — Force equals pressure times piston area. A 125 mm bore gives an area of about 0.01227 square metres, and at 12 MPa this produces roughly 147 kN. An answer of 74 kN uses half the area, which is wrong, and 294 kN doubles the force, while 118 kN reflects an arithmetic error in the area.
- 9. C** — Parasitic draw is current, so the meter must be in series with the battery cable, and the reading must wait until modules have shut down, which can take 20 minutes or more, or the figure will include normal wake-up loads. A meter across the terminals measures voltage, and a running engine or cranking removes the key-off condition.
- 10. D** — Air at the breather means the pressure is passing the rings into the crankcase, so ring or cylinder wear is indicated. Air at the intake points to an intake valve, and air at the exhaust points to an exhaust valve. Bubbles in the coolant are the sign of a head gasket or crack leading to the water jacket.
- 11. B** — A warm engine with cool hoses means coolant is not flowing into the heater core, which points to a closed or failed control valve, a plugged core, or air in the system. Refrigerant and the compressor clutch relate to air conditioning, and a stuck-open thermostat would lower engine temperature rather than leave it normal.
- 12. C** — Foam and pump noise are the symptoms of aeration, which comes from low fluid or air drawn in through a loose suction hose or fitting. Topping up and repairing the leak, and then bleeding the system, resolves it. A relief valve setting, worn tires, and a plugged radiator would not generate foam in the fluid.
- 13. A** — A leakage test checks system integrity by holding an applied brake condition and watching the pressure drop for one minute, then comparing it with the limit for that vehicle. Governor cut-in, warning

point, and compressor recovery are separate tests, each with its own procedure, and they do not measure leakage.

14. B — Rising rpm without matching road speed is the signature of clutch slip, and with correct free play the cause is a worn or oiled-up disc. Oil from the crankshaft or input shaft seals must be traced. A locked input shaft would stall the truck, and axle oil level or a water pump seal does not change torque transfer.

15. D — A cab that is not locked could tilt forward or shift while driving, so the truck must not be moved until the latch and lock bars are checked for alignment, damage, or obstruction and the cab is positively locked. Driving slowly, pressing the cab by hand, or greasing pins does not confirm a safe lock.

16. C — Ohm's law gives resistance as voltage divided by current, so 0.8 V divided by 400 A is 0.002 ohm, or 2 milliohms. That is a high figure for a heavy cable, and indicates a poor connection that deserves cleaning. An answer of 0.02 ohm is ten times too large, and 0.2 ohm is a hundred times too large.

17. D — CK-4 is designed to be backward compatible with older heavy-duty engines, so it suits the 2014 truck. FA-4 is a lower-viscosity oil meant for specific newer engines only when the manufacturer approves it. Viscosity alone is not the specification; the API category and manufacturer approval must also match the engine.

18. A — High-voltage systems can hold dangerous charge, so the vehicle is shut down, the key removed, the service disconnect opened, the specified wait observed, and zero volts verified with a meter rated for the system. The 12 V battery does not isolate the high-voltage pack, and touching cables to test them is never acceptable.

19. B — Steering gears wear most in the straight-ahead position, so the lash adjustment is made at centre, where it is tightest, and then checked through travel to avoid binding. At full lock the clearance is greater, so adjusting there would leave the centre far too tight. The clearance is not equal at all points.

20. D — Spring brakes release only when air pressure compresses the power spring, so the first check is whether air actually reaches the chamber release port, and whether a line, valve or diaphragm problem blocks it. Lining wear, compressor carbon, and slack adjuster stroke do not keep a charged chamber from releasing.

21. B — The clutch brake slows the input shaft so a gear can be selected from a stop without grinding, and it works only at the very end of pedal travel. It is not for upshifts or downshifts, and using it while the truck is moving wears it and the shaft quickly. It plays no part in controlling speed on a grade.

22. C — A working 12-volt charging system normally holds about 13.5 to 14.5 volts with the engine running. A reading near 12.3 volts is only a discharged-battery level, which means the alternator is not charging and the batteries are feeding the load. Checking belts, B+ wiring, and the regulator is the right next step.

23. A — Bearing wear lets oil escape faster than the pump supplies it at low speed, so pressure is poor at idle but recovers when pump output rises at higher rpm. A plugged pickup would starve the pump at all speeds, and a stuck-closed bypass matters only when the filter is blocked. A blocked cooler core would not behave that way.

24. D — Decanted hazardous products need a workplace label giving the product identifier and safe-handling information, and the safety data sheet must be accessible to workers. Using the bottle for one shift does not remove the requirement. Initials and a date identify who filled it but tell nobody what is in it or how to handle it.

25. A — Dragging brakes with full air mean the trailer's relay valve exhaust is blocked or sticking, or a spring brake is not releasing, so air stays trapped in the chambers and the shoes keep contact with the drums. Tire pressure, fifth-wheel grease, and engine coolant level have no effect on air release from a trailer's brake circuit.

26. B — A relief valve limits maximum pressure, and a setting that is too high allows pressure to rise past the rating of hoses, seals, and components, which can burst or distort them. It does not reduce flow, and the pump working against the relief valve generates more heat, and typically more noise, not less.

27. C — A vehicle pulls toward the side with less positive caster, so a left pull with equal camber means the left wheel carries less positive caster than the right. Axle ratio, rear tire size, and rear chamber size do not generate a steering pull at the front axle, and rear axle differences would not be fixed by an alignment adjustment.

28. B — Alternators generate AC and rectify it with diodes, so excessive AC ripple on the DC output shows that a diode or stator winding has failed and the rectification is incomplete. Weak batteries and slipping belts lower output but do not add ripple, and a ground cable fault causes voltage drop rather than an AC component.

29. A — The power spring in a spring brake chamber stores great force, and opening it can cause serious injury or death, so the chamber is replaced as a complete assembly. Removing the clamp ring, welding, or epoxy repair all invite a violent release or a failed housing. A cage bolt is used for temporary release only.

30. D — Oil on a disc contaminates the friction material permanently and causes chatter, so the disc must be replaced and the leak fixed first, or the new one fails. Cleaning cannot remove oil soaked into the facing. Heavier gear oil and slower engagement do not cure contamination, and may mask the symptoms.

31. C — When coolant level, thermostat and fan are good, heat rejection under load is usually limited by airflow, so plugged fins or a loose shroud are the next checks. Replacing the pump without evidence is guesswork. A higher-rated thermostat raises operating temperature rather than curing overheating, and acid flushing does not address airflow.

32. C — Constant bubbles with poor cooling and short cycling indicate a low charge, so the leak should be found and repaired before the system is evacuated and recharged to the specified weight. Refrigerant

must be recovered, not vented, and a blocked heater core or a weak battery would not create bubbles in the refrigerant sight glass.

33. A — Under load, a charging cable should drop only a few tenths of a volt at most, so 0.9 V shows significant resistance from corrosion, a loose terminal, or damaged strands. Cleaning or replacing the cable restores charging. It does not point to an overvoltage condition or a bad battery cell, and one volt is not normal.

34. B — Heat-treated frame rails get their strength from the heat treatment, and welding or drilling across the flanges can weaken them or start new cracks, so manufacturers prohibit it. Approved reinforcing plates, cleaning and inspecting the crack, and following the manufacturer's repair details are all normal good practice for frame repair.

35. D — Coolant chemistries are not freely interchangeable. Mixing conventional silicate-based coolant into an organic-acid ELC can drop out inhibitors, gel, and leave deposits that restrict radiators and heater cores. The mix must be tested and, if contaminated, drained and flushed. The claim of better protection or longer seal life has no basis in practice.

36. A — An automatic slack adjuster that allows excess stroke is signalling a problem, such as worn foundation parts, a bent bracket, or an adjuster defect, so the cause must be found and corrected. Manual adjustment only hides it and may stop the automatic function. Drum thickness and air pressure are unrelated to stroke control.

37. B — A transmission that jumps out of one gear usually has wear in the engagement teeth, shift fork, or detent system for that gear, so the gear cannot stay positively locked. Overfilling does not push gears apart, the clutch brake only matters when stopped, and a range cylinder leak would affect every gear in that range.

38. C — Rapid clicking with dimming lights means current is available only briefly before voltage collapses, which is typical of a flat battery or a bad cable or terminal connection. Testing battery state of charge and voltage drop on the cables comes first. The fuse, compressor, and cluster do not cause rapid solenoid chatter with dim lights.

39. D — A cab on air springs is leveled by a height control valve, so if the bags hold air but the cab sits low, the valve linkage may be misadjusted or worn. Brake pushrod stroke, thermostat, and input shaft seal have no effect on cab ride height or the leveling system that sets it.

40. C — A frame is square when the diagonal measurements between matching reference points agree within the manufacturer's tolerance, so that comparison is the standard check for racking or sway. Rear ride height, axle weights, and headlight position can be affected by many unrelated conditions, and none shows whether the rails are twisted or racked.

41. A — A refractometer reads freeze protection, and minus 20 degrees is not enough for minus 35. Replacing some coolant with concentrate to approach a 50/50 mix gives protection to about minus 37. Adding water weakens protection, a block heater only warms the engine while plugged in, and washer fluid is not engine coolant.

- 42. D** — Leg tension rises as the angle from horizontal gets flatter, so longer legs that stand steeper reduce the force in each leg for the same 900 kg load. Shorter legs flatten the angle and raise tension. A better hook only improves hook strength, and does nothing to change the forces the legs carry.
- 43. B** — In the standard seven-way trailer circuit, the white wire is ground, which is why a corroded white wire or a poor ground connection can make other lights dim or flicker. Left and right turn with stop, and tail and marker lights, use other conductors, each with its own colour in the standard code.
- 44. A** — Drift under load in neutral means fluid is leaking past the piston seals, or the control or check valve is leaking, so the cylinder can't hold its position. Testing isolates the cause. Reservoir level and breather condition do not move a cylinder, and thicker cold fluid would slow movement rather than cause drift.
- 45. B** — The stamped number is the discard diameter, the largest size at which the drum is safe, so a reading of 422.4 mm means the drum must be replaced. Over-limit drums have less metal to absorb heat and can crack. Machining would only enlarge the bore, and thicker linings cannot restore the lost wall thickness.
- 46. D** — The fill hole on a manual transmission marks the correct level, so with the vehicle level the oil should just reach the bottom of the opening. Removing the drain plug dumps oil, overfilling through the breather causes aeration and leaks, and these transmissions typically have no dipstick for a running check.
- 47. C** — High current with slow cranking, when batteries and cables are good, means the starter is working too hard, either from worn bushings and a dragging armature, or because the engine is hard to turn. An open fuse would stop the solenoid, not raise current, and the alternator and switch are not parts of the draw path.
- 48. B** — Low boost with clean intake air and a sealed charge-air path points to a turbine-side problem, such as an exhaust leak before the turbo, a damaged wheel, or a sticking VGT actuator that cannot spool the compressor. Fuel filtering, coolant strength and DEF level do not govern boost pressure on a turbocharged engine.
- 49. C** — A low-pressure cutout switch protects the compressor by opening the clutch circuit when the refrigerant charge is too low, and static pressure near zero means the system is empty. The leak must be repaired and the system recharged. The heater valve, engine oil level, and brake lamps are not part of that circuit.
- 50. A** — Elongated holes mean the joint has been working loose, and a proper repair restores the fit by replacing or repairing the parts and using the specified fasteners at the correct torque. Larger washers hide the problem, welding may violate frame guidance and cause cracks, and shorter bolts reduce clamping strength.
- 51. D** — In regenerative braking, the traction motor works as a generator, converting kinetic energy into electrical energy that charges the battery, and slows the vehicle in the process. The friction brakes

remain in place as backup. The other options describe engine braking, friction braking, and an air system, none of which return energy to the battery.

52. D — A wheel speed sensor depends on a consistent gap to the tone ring, so runout, damaged teeth, or loose bearing play can create an erratic signal that appears at speed. Air pressure does not feed the sensor, lining wear does not change the signal, and the tone ring is a passive toothed wheel that needs no voltage.

53. B — The range cylinder is moved by air, so if there is no air movement, the supply, shift valve, and lines are the first checks. The clutch brake, axle ratio, and oil level do not feed the cylinder. Following the air from the supply to the cylinder with a gauge isolates the break.

54. C — In the standard relay numbering, 85 and 86 are the two ends of the control coil, 30 is the common power input, and 87 is the normally open output. When the coil is energized, the switch closes between 30 and 87. Testing coil resistance across 85 and 86 and continuity across 30 and 87 is a basic relay check.

55. A — Low-speed, light-load duty cycles keep exhaust temperatures below what passive regeneration needs, so the diesel particulate filter loads with soot and requests an active regeneration. DEF level is not part of soot oxidation, a clean air filter does not create soot, and a late thermostat would lower, not raise, exhaust temperatures.

56. B — The height control valve admits or exhausts air to maintain ride height, so when the springs hold air but the truck sits low, the valve linkage may be out of adjustment, bent, or worn, and it should be checked and reset. Brake pushrod stroke, governor setting, and tread patterns do not control suspension height.

57. D — A fuse that blows repeatedly is reporting an overload or short, so the fault must be found and the specified rating retained to protect the wire. A larger fuse allows the wire to overheat before it opens, wire is no protection at all, and moving the circuit to a higher-rated fuse has the same danger.

58. A — Each leg carries half the load vertically, 600 kgf. Because the leg slopes at 30 degrees, tension equals the vertical share divided by the sine of 30 degrees, which is 0.5, giving 1,200 kgf. Choosing 600 kgf forgets the angle completely, and 2,400 kgf double-counts the load by ignoring that two legs share it.

59. C — High discharge pressure means heat is not leaving the refrigerant, and a dirty condenser coil or a failing condenser fan is the usual cause when the charge is correct. Cleaning the coil and checking the fan comes first. A blocked floor drain, fuel cap, or landing gear height has no relation to head pressure.

60. D — Foamy fluid with noise at the pump indicates cavitation and aeration, caused by low fluid level or air entering through a loose inlet line or fitting. The leak must be repaired, the fluid topped up, and the system bled. A heater valve, tire pressure, and the air dryer have no part in pump inlet conditions.

61. B — A saturated desiccant cartridge cannot remove moisture, so a five-year-old dryer that lets water through needs a new cartridge and a check of the purge cycle and heater. Alcohol damages rubber parts and is not recommended. A bigger compressor adds more moisture, and removing the dryer leaves the whole system exposed.

62. A — Heavy stop-and-go use generates heat, and if the level is correct, restricted cooler lines or cooler airflow are the likely reason heat cannot be rejected. Checking the cooler and its circuit is the logical step. Automatics have no clutch brake, the modulator is not air-operated in that way, and axle backlash does not affect transmission fluid temperature.

63. C — SCR needs DEF at 32.5 percent urea. At 18 percent, the system cannot reduce NOx efficiently and dosing may be altered, which explains high downstream NOx. The solution is draining and flushing the tank with fresh fluid. The range is not seasonal, and a fuel filter does not control DEF concentration or dosing.

64. B — The centre bolt locates the leaves and the axle on the spring, so a broken one lets the axle shift, which misaligns it and scrubs tires. The pack needs a new bolt or springs and a check of axle position. Steering gear, drum, and fan clutch problems do not follow from a shifted axle.

65. C — A good splice has a low-resistance connection and a moisture seal, which an adhesive-lined heat-shrink over a crimped or soldered joint provides. Twisted joints and tape loosen and let moisture in, an unsealed butt connector corrodes, and wire nuts are household devices that vibration quickly loosens in a truck harness.

66. A — DEF freezes at about minus 11 degrees Celsius, so at minus 25 the fluid is solid until coolant flowing through the tank heater thaws it, and the level reading is unreliable until then. The system is designed for this. Adding water dilutes the urea, and the catalyst does not absorb liquid DEF.

67. D — Under the standard colour code, blue gladhands carry the service (control) signal and red gladhands carry the emergency or supply air that charges the trailer and holds its spring brakes released. Swapping the two would charge the wrong circuit, which is why the colours are distinct and the couplers are often keyed.

68. C — Burnt-smelling dark fluid with metal paste means that clutch packs or bearings are wearing, and the damage may be well advanced. The transmission needs diagnosis and probably an overhaul. Normal fluid at that interval looks much cleaner, and overfill or a wrong filter does not create burnt fluid or fine metal.

69. A — A seat belt must hold its rated load in a crash, so frayed webbing or a faulty retractor means the entire assembly is replaced. Cutting the webbing reduces its length and strength, spray lubricant can weaken fibres, and a working buckle alone does not prove that the belt would perform correctly.

70. B — Refrigerants are regulated, and releasing them to the air is prohibited, so they are recovered by equipment designed for that purpose and by a technician certified by the province. Venting, reusing untested refrigerant, or burning it is illegal or unsafe, because the decomposition products of burning refrigerant can be toxic to breathe.

71. D — When lamps dim and flicker as other lamps load the circuit, voltage is dropping across a shared poor ground, often through a corroded connector or ground wire between trailer and tractor. Restoring the ground cures it. A brake switch or alternator overvoltage would not cause dimming, and a burnt-out bulb draws less current.

72. C — Walking-beam suspensions locate the axles with bushings and torque rods, so wear lets an axle shift off square, which scrubs the tires on the inside shoulders. Measuring axle alignment and inspecting the bushings finds the problem. Radiator hoses, turbo oil lines and the hoist cylinder have no role in locating the rear axles.

73. D — At low temperatures, paraffin wax in diesel precipitates when the fuel cools below its cloud point and clogs the filter, causing starvation and stalling. The cure is winter-grade fuel, an anti-gel treatment, and fresh filters. Injector icing does not match a waxy filter, and starter speed and oil viscosity do not close the fuel supply.

74. B — A truck pulls toward the side that brakes harder, so a pull to the right means the left brake is weak or inoperative. Inspecting the left steer brake for contamination, adjustment, or chamber problems is the logical step. A safety valve does not raise side-specific pressure, and a dryer leak affects both sides equally.

75. A — An automated manual has no pedal, and its controller must learn where the new clutch engages, so a calibration or touch-point procedure is performed with the scan tool. Driving without it risks harsh shifts and clutch damage. There is no pedal free travel to set, and the clutch brake and range cylinder are unrelated to the calibration.

76. A — A click-type wrench keeps its calibration only if the spring is relaxed, so it is stored at its lowest setting. Leaving 400 N·m dialled in holds the spring under load and drifts the calibration over time. The maximum setting is the most compressed position of all, and a half-range setting still leaves tension in the spring.

77. C — Frost builds up on the evaporator coil as moisture freezes, which restricts airflow and reduces cooling capacity, so the defrost cycle uses hot gas or electric heat to melt it, then resumes normal cooling. It does not clean the condenser coil, heat the cargo space for loading, or purge the fuel system of air.

78. B — When an element clogs, the pressure difference across it rises, and a bypass valve opens to let oil pass unfiltered rather than starve the system or collapse the element. This protects the circuit short term, and the filter must still be changed promptly. The valve neither stops the pump nor sends oil back for cleaning.

79. D — The 5-volt reference comes from the control module, so a missing reading at the connector means a break or short between module and connector, or a module fault. Tracing the wire is the correct step. A sensor is only the receiver and cannot make its own supply vanish, and a resistor or battery cannot replace the module's 5 V.

80. B — An oil-wet shock has lost its seal and damping fluid, so it must be replaced, and doing both sides of the axle keeps the damping balanced. Engine oil is not a shock fluid, driving without shocks harms ride control and tire wear, and new bushings cannot restore the lost damping inside the shock.

81. A — Supply pressure at 120 kPa is far below specification, so the high-pressure pump is starved, which makes actual rail pressure fall short. Fix the supply side first by checking the filters and lift pump.

Replacing injectors or a sensor without proof is guesswork, and raising the command cannot create pressure the pump cannot make.

82. C — A healthy CAN backbone has a 120-ohm terminating resistor at each end, which read in parallel as about 60 ohms. A reading of 120 ohms means one terminator is missing or its connection is open. A short would give near zero, and the test is made with power off, so ignition state does not matter.

83. D — The safety valve protects the system if pressure climbs well above the governor's cut-out, so an opening at 1,035 kPa means the compressor is still pumping when it should have unloaded. The governor and unloader circuit are the first suspects. Spring brakes, hot drums, and the warning switch do not push reservoir pressure upward.

84. A — Full tank pressure with a low-supply code means the air is being lost or restricted between the tank and the shift valves, so the line, filter, and regulator are checked. Replacing the control module is premature, thicker oil does not change shift air supply, and raising governor settings alters the whole air system for no reason.

85. C — An isolation fault means high-voltage conductors may be leaking to chassis ground, which is a shock hazard, so the system is de-energized and tested with an insulation resistance tester per the manufacturer's procedure. Clearing codes, bypassing the monitor, or spraying cleaner on cables ignores the hazard or makes it considerably worse.

86. B — Jaws that do not fully close on the kingpin suggest wear in the jaws or pin, or a misadjusted release mechanism, so the parts are gauged and the mechanism is adjusted or repaired. Too much grease only affects friction on the plate, and trailer tires and brake chambers do not affect the locking jaws.

87. D — Water damages injectors, so the separator must be drained through its drain valve, and the system primed afterwards because draining lets air in. An additive does not remove accumulated free water. The oil filter has no role in fuel water separation, and disconnecting the sensor hides the warning while the water remains.

88. D — Moisture in refrigerant forms acids and can freeze at the expansion device, and the drier's desiccant absorbs moisture that enters when the system is opened, so it is replaced with the compressor. It has no effect on charge volume, is not a time-limited wear part, and does not stop a compressor running.

89. A — Many PTO systems are interlocked, so the module only allows engagement when conditions such as the parking brake, vehicle speed and neutral are met. A status of 'not applied' explains the refusal and points to the parking brake input or circuit. The lit lamp shows the switch works, and the evidence does not show a module or PTO failure.

90. B — Heat checking that has progressed to cracks weakens a drum, and machining cannot guarantee that cracks are gone or that wall thickness remains safe, so the drums are replaced in axle sets. The cause, such as a dragging brake or poor retarder use, must also be found. New linings alone and washing do nothing for a cracked casting.

91. C — A new shaft can introduce vibration if its yokes are out of phase, its balance is off, or the installation changed the working angles. These are checked first. Transmission oil, lining wear, and tread depth do not follow from a driveshaft replacement, and none of them would appear immediately after the change.

92. B — A lip seal must face the fluid it retains so pressure presses the lip against the shaft, and a seal driver keeps it square in the bore. A dry lip can scorch at first rotation. Hammering with a socket or drift cocks the seal, and silicone in the bore does not correct a crooked or reversed installation.

93. C — Slider pins must fully pass through the rail holes to lock the tandem, so bent or misaligned pins, or a stuck release mechanism, keep them from extending. Low tire pressure, kingpin wear, and an air line affecting ABS do not keep the pins from entering, and the pins are not air or electrically controlled.

94. A — Hoses must follow the manufacturer's minimum bend radius and avoid chafing, because tight loops and sharp edges lead to kinks, abrasion, and early failure. A bend does not lower system pressure or raise fluid speed in a helpful way, and any small cooling benefit does not offset the risk of a burst high-pressure hose.

95. D — FMI 1 says the reading is valid but extremely low, which may be a real low-pressure condition. Checking oil level and measuring true pressure with a mechanical gauge tells whether the engine or the sensor is at fault. Replacing parts, clearing codes, or reflashing before verifying risks engine damage or a repeat fault.

96. B — A pintle hook or lunette ring that has exceeded wear limits is a safety hazard, so the hook is replaced and the ring inspected, as the two wear together. Welding changes the metal's strength, and grease or lower weight do not restore the lost section thickness that keeps the trailer connected.

97. D — When door seals are intact, water often enters through blocked cowl or door drains or a leaking windshield seal, so these are cleaned and checked, often with a water test. The air compressor, DEF tank, and clutch pedal bushings are not likely paths for rainwater entering the cab in that location.

98. A — Resistance is measured by the meter's own small test current, so any outside voltage corrupts the reading and can damage the meter. The circuit is de-energized and the sensor isolated from the harness. The meter must be in its ohms range, and shorting sensor terminals is unnecessary and can harm the sensor.

99. C — Slow release at only one axle group points to that circuit's relay or quick release valve, where a sticky piston or blocked exhaust port keeps air in the chambers longer. A treadle valve fault would affect every axle, the compressor only supplies air, and the front chambers have no influence over rear brake release.

100. C — A seized, dry needle bearing is damaged and cannot be trusted again, so the joint is replaced and the service greasing practice corrected so all cups receive grease until it purges. Penetrating oil and fresh grease do not restore damaged needles, and welding a yoke ruins its strength and balance.

101. A — In the failure mode identifier list, FMI 0 means data valid but above the normal operating range at the most severe level, such as coolant temperature well above the limit. Erratic data is FMI 2, voltage above normal or shorted high is FMI 3, and a bad intelligent device or network is FMI 12.

102. D — Two equal 6-ohm loads in parallel give 3 ohms total, so the current is 12 volts divided by 3 ohms, which is 4 amps. Each branch carries 2 A and the branches add together. An answer of 2 A is a single branch only, and 1 A would be correct only if the resistance were 12 ohms.

103. B — Centre wear means the middle of the tread has been carrying more load than the shoulders, which occurs when the tire is over-inflated and the crown bulges outward. Under-inflation does the reverse and wears the shoulders, and toe and camber problems create feathering or one-sided wear instead of centre wear on the steer axle.

104. D — Too much slave piston lash delays or reduces the valve opening that creates retarding power, so it must be reset to specification at the correct crank position for each cylinder. Idle speed does not influence compression brake force this way, a turbo swap does not fix lash, and a wide clearance is the fault, not a safeguard.

105. B — On resistor-type blower circuits, the highest speed bypasses the resistors and runs the motor at full voltage, so when only high works, the resistor block or speed control is the failed part. A dirty filter would reduce airflow on every speed, and the clutch and thermostat are not in the blower circuit.

106. C — Worn camshaft bushings let the cam shift and bind, so uneven wear and sloppy action are cured by replacing bushings and seals and restoring specified end play. Random washers may not control position correctly, grease pressure cannot rebuild worn metal, and the chamber only provides the push that the foundation hardware then transmits.

107. A — Gear noise that changes between drive and coast points to the ring and pinion, where the contact pattern or bearing preload is wrong. A marking compound check shows the pattern on the teeth. Brake air pressure, coolant, and the clutch disc have no influence on whine from the carrier under coast conditions.

108. D — A module that does not power up has no power, no ground, or no ignition feed, so fuses, feeds, and grounds are checked before replacing anything. Reprogramming requires a module that communicates, and replacement without testing is a costly guess. Transmission fluid has no bearing on a module that shows no sign of life.

109. C — Dual tires share load, so a smaller or underinflated tire makes its partner carry too much and both wear quickly, while the smaller one drags. Matching diameter and keeping equal inflation prevents that. Mixing worn and new, using unequal pressures, and different tire types all create unequal loading and heat.

110. B — Torque-to-yield bolts are tightened into their plastic range and cannot be trusted again, so the right coaching is to explain why, point to the service information, and let the apprentice fit new ones. Allowing reuse or fixing it silently teaches nothing, and threadlocker cannot restore the clamp load lost to permanent stretch.

111. A — Trailer ABS faults are often wheel speed sensor problems, so a visual check of cables and connectors, plus measuring resistance and sensor gap, are standard first steps before any parts are replaced. Replacing air tanks or disconnecting batteries is not diagnostic, and adding oil to bearings does not change a sensor signal.

112. D — Accumulators are pre-charged with dry nitrogen, which is inert, and the hydraulic side must be fully relieved before checking, or the reading is wrong and unsafe. Shop air contains moisture and oxygen, which can cause damage or fire, oxygen with oil is an explosion hazard, and propane is flammable and unsuitable as well.

113. C — A compression brake works when the driver is not asking for fuel, the engine is turning fast enough to be effective, the driveline is connected through the clutch, and the module enables it. Pressing the throttle or applying cruise opposes it. A parked or neutral truck has no load to retard, and ABS is not disabled.

114. A — Isolating the sender circuit tells where the fault lies. Grounding the sender wire should drive the gauge to empty if the gauge and wiring are good, and then the sender or its ground is suspect. Replacing the gauge first is guesswork, filling the tank proves nothing, and battery changes do not affect a resistance-based sending circuit.

115. B — An open-circuit code points to a break between the controller and the sensor, so the connector, harness flex areas, and sensor resistance are checked first with a meter. Replacing the controller is premature, and clearing codes or greasing a sensor does not repair a broken circuit; wiring faults are common at flex points.

116. D — The inter-axle differential lock forces both drive axles to turn together, which helps on slippery ground, but it must be unlocked on pavement to prevent driveline wind-up and tire scrub. It is not meant for highway speeds or parking. Locked for all driving, it stresses the axles and shortens component life.

117. C — Even clamping needs a star or criss-cross sequence, tightened in stages to the specified torque on clean, undamaged threads, so the wheel seats evenly on the hub pilots. A circular order can tilt the wheel, random tightening leaves uneven load, and every nut carries part of the load, including the inner ones.

118. A — An electric truck relies on its 12-volt supply to run the modules and contactor coils that connect the high-voltage battery, so a weak 12 V battery can prevent ready mode even when the traction battery is fully charged. A full high-voltage pack, cold transmission fluid, or air pressure does not block start.

119. C — Lash must be measured with the valve on the base circle of its cam lobe, which occurs with the piston at top dead centre on the compression stroke, when both valves are closed. An open valve or a random position gives a false reading because lobe lift is included, so the clearance would be set wrong.

120. B — Programming writes memory, and a voltage dip can corrupt it and leave a module unusable, so a battery maintainer holds steady voltage during the process. Disconnecting the battery would stop

programming entirely, and cooling the vehicle is irrelevant. Running the engine can cause voltage fluctuation and is generally not recommended during flash programming.

121. A — High motor current with slow, stalling movement shows the motor is working against mechanical resistance, which usually comes from seized or corroded pivots and linkage. Cleaning and lubricating or replacing them restores free movement. A heater thermostat, brake air charge, and battery voltage do not load a wiper motor mechanically.

122. D — Air escaping at the breather hole during a service application means the diaphragm is leaking, so the chamber should be replaced. A loose clamp ring leaks at the seam, and a leaking fitting bubbles at the connection. Air should not exit the breather hole in normal operation, since the diaphragm is meant to hold pressure.

123. B — Heat expands the oil and air in an axle, and a plugged breather lets internal pressure rise until oil is forced past the seals, even at a correct oil level. Cleaning or replacing the breather and the seals cures it. Clutch free play, compressor output and coolant level are not linked to axle housing pressure.

124. D — Hub oil leaking past the seal can result from overfilling, a plugged vent that builds pressure, or a worn wheel seal, so those three points are checked. The air dryer purge valve, the coolant overflow bottle and the transmission shift tower have no connection with the oil in a wheel end.

125. A — Many hydraulic fan systems are fail-safe, so a control solenoid fault or a missing temperature signal sends the fan to full speed for protection. Checking the solenoid circuit and sensor inputs finds it. A stuck-open thermostat lowers engine temperature without driving the fan, and the belt and oil level do not command fan speed.

126. C — Fogging is moisture condensing on cold glass, and the fastest cure is drying the air, which fresh-air mode with the A/C compressor running does while the heater warms it. Recirculation traps moist cab air, an off heater provides no warmth, and a low fan with closed vents leaves the moisture on the glass.

127. B — Standard flashers sense load current, and LEDs draw so little that the flasher assumes a bulb is out and flashes quickly, called hyperflash. An LED-compatible flasher or load resistors restores the correct rate. Excess brightness, overcharged batteries, and a worn turn signal switch would not produce this particular symptom on a truck.

128. B — Burning hydraulic oil is a flammable liquid fire, which is Class B, and an ABC dry chemical extinguisher aimed at the base smothers it. Water spreads an oil fire and does not cool the oil quickly enough. Class D units target magnesium and similar metals, and Class K units are formulated for kitchen cooking-oil fires.

129. D — Overheated hub oil usually results from a bearing set too tight, so preload creates heat, or from low or contaminated oil that cannot lubricate and cool properly, and the bearing should be inspected for damage. Tire pressure has little effect on the bearing, and cargo lighting and gladhand order are not connected with wheel end heat.

130. A — Milky fluid is the typical sign of water or entrained air, both of which damage pumps and valves, so the source must be found and corrected and the fluid conditioned or replaced. It is not normal ageing, cold fluid does not look milky, and extra additive does not turn the fluid cloudy.

131. C — Brake lag depends on how fast air reaches the chambers, and a relay valve near the rear axles is fed by a signal line and releases supply air directly from a nearby reservoir, avoiding long line travel. A bigger treadle valve, another governor, or a smaller dryer do not shorten the path that air must travel.

132. A — An electric retarder depends on its enable switch and control signals, such as pedal input and ABS status, to decide when to apply, so those are verified first. The air dryer, valve lash, and fuel filter have no part in a driveline retarder, which uses electromagnetic coils to create drag on the driveshaft.

133. C — A correct bearing adjustment seats the rollers by turning the hub while the nut is torqued, then backs off and sets the final torque to reach specified end play before the nut is locked. Overtightening with an impact gun preloads the bearings and overheats them, and a loose or one-turn-backed nut leaves the wrong end play.

134. B — Filter life is judged by measured restriction, so replacement is due when the indicator or gauge reaches the maker's limit. Fixed oil-change timing may waste filters in clean duty or fail in dusty work. Waiting for smoke means the engine has already been starved of air, and tapping a filter damages the media without restoring flow.

135. D — A battery acts as a large electrical buffer, so disconnecting it with the engine running can let alternator output spike and damage sensitive modules. The engine's oil pressure and compression do not depend on battery connection, and an odometer is not reset that way. Use a proper charging test instead, with the batteries connected.