

PRACTICE EXAM 20: 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 scan tool shows an engine derate with a low oil pressure fault, but the dipstick level is normal and cranking pressure is steady. What is the correct sequence?

- A. Replace the oil pump and then verify the sensor reading
- B. Disable the derate with a calibration change and keep running
- C. Add a quart of oil and clear the code to see if it returns
- D. Confirm pressure with a gauge and then test the sensor circuit if the gauge reads normal

2. An oil analysis report on a highway tractor shows elevated sodium, potassium, and boron, normal silicon, and a drop in oil viscosity. What is the most likely cause?

- A. Dirt is entering through a torn air intake hose
- B. Engine coolant is leaking into the lubricating oil
- C. Fuel is diluting the oil from a leaking injector seal
- D. The oil was topped up with the wrong viscosity grade

3. A tractor shows excess idle vibration, and the engine moves noticeably when the throttle is blipped. What is the likely cause?

- A. A weak battery that is causing a slow cranking speed at start-up
- B. A thermostat that is opening too early in the warm-up cycle

- C. A failed engine mount that lets the engine move
- D. A turbocharger wastegate that is sticking open under boost

4. Oil is found in the air dryer discharge and the brake tanks of a tractor, and the compressor is the engine-driven type. Which check should come first?

- A. The ABS modulator valves for internal leakage past the seals
- B. The slack adjusters for pushrod travel over the stroke limit
- C. Compressor intake restriction and compressor wear
- D. The parking brake control knob for a weak detent spring

5. An engine calibration is raised to a higher torque rating, and the clutch begins slipping within weeks. What is the most likely reason?

- A. The clutch torque rating is below the new engine output
- B. The release bearing is lubricated with too much grease on its sleeve
- C. The transmission oil is a lighter viscosity than the maker requires
- D. The driveline slip yoke has too much spline lubricant packed in

6. A technician must remove the radiator cap on an engine that has just been shut down after a long climb. What is the safest practice?

- A. Remove the cap quickly with a rag to prevent coolant splashing
- B. Open the cap fully while the engine is idling to see the level
- C. Loosen the lower hose clamp first to release the pressure
- D. Let the system cool, then turn the cap slowly to its first stop to relieve pressure

7. The ABS lamp on a trailer stays on after it is connected to a tractor, and the tractor's lamp is normal. What should be checked first?

- A. The brake lining thickness on each of the trailer axles

- B. Power and ground supply to the trailer ABS module
- C. The trailer tire tread depth on the drive wheel positions
- D. The landing gear crank gearbox oil level and condition

8. A hydraulic pump on a work truck whines loudly and the reservoir fluid is foamy. The reservoir is full. What should be checked?

- A. The cab heater control valve for coolant leakage at the fitting
- B. The air dryer cartridge for desiccant condition and saturation
- C. The suction strainer and suction line for restriction or leaks
- D. The transmission oil cooler for restricted flow in its lines

9. A scan tool shows coolant temperature at minus 40 degrees Celsius on a warm engine, and the cooling fan runs constantly. What is the most likely fault?

- A. A shorted fuel pressure sensor in the common rail assembly
- B. An open circuit at the coolant temperature sensor connector
- C. A failed alternator regulator in the rear housing of the unit
- D. A worn thermostat spring that holds the valve partly open

10. A mixer truck engine shows high silicon and rising iron and aluminum in its oil sample, while sodium and potassium are normal. What should the technician inspect first?

- A. The intake tract between the filter and turbocharger for leaks
- B. The oil cooler core for internal coolant seepage into the oil
- C. The fuel injectors for nozzle leakage into the crankcase area
- D. The crankshaft damper for a failed viscous fluid fill inside

11. A truck cab stays very warm in winter even with the temperature control set to cold, and both heater hoses are hot. Which part is most likely at fault?

- A. The thermostat opening too late in the warm-up cycle
- B. The compressor clutch not engaging when the A/C is on
- C. The condenser fan running slowly at idle in traffic
- D. The heater control valve stuck in the open position

12. A radiator core on a truck cracks near the tank seam repeatedly, and a rubber isolator at the mounting is missing. What is the cause?

- A. Missing isolators let frame vibration fatigue the core seams
- B. The coolant is too concentrated and needs a little more water
- C. The cap pressure rating is too low for the cooling system
- D. The fan blades are turning too slowly at idle in traffic

13. A compressor discharge line on a tractor is found to have heavy carbon build-up that narrows its inside diameter. What does this condition cause?

- A. Faster tank build-up because pressure is trapped near the cylinder head
- B. Lower brake chamber pressure when the pedal is applied lightly
- C. Heat and back pressure at the compressor, so replace the line
- D. Quicker desiccant wear in the dryer because of lower air flow

14. A technician measures flywheel face runout above specification during a clutch job. What is the correct conclusion?

- A. The clutch disc will wear in and correct the runout
- B. The runout is normal because of the crankshaft end play
- C. The pilot bearing can be tightened to compensate
- D. The flywheel or housing must be corrected or replaced before installing the clutch

15. A cab on an air-suspended mounting sits low on one corner after parking. What should be checked?

- A. The engine thermostat housing for coolant leakage at the gasket
- B. The cab air spring and its supply line for leaks
- C. The turbocharger boost line for cracks near the clamp collars
- D. The compressor intake filter for restriction and dust build-up

16. Several sensor fault codes set at once for boost, oil pressure, and rail pressure, all low-voltage faults. What is the best first step?

- A. Check the shared five-volt reference and its ground circuit
- B. Replace the three sensors one at a time in order of price
- C. Reflash the ECM and clear every stored code at the same time
- D. Replace the fuel filter and bleed the whole fuel system

17. Between oil changes the dipstick level on a delivery truck engine has risen, the oil smells of diesel, and the oil looks thin. Which cause best fits?

- A. A cracked cylinder liner is leaking coolant into the sump
- B. The oil filter bypass valve is stuck in the open position
- C. A leaking injector O-ring or nozzle is letting fuel into the crankcase
- D. The turbocharger oil seal is leaking into the exhaust

18. A technician must service the engine on a hybrid truck that can start itself. Which first step is correct?

- A. Leave the vehicle in ready mode with the parking brake set firmly
- B. Disconnect only the 12 V battery and begin the engine work
- C. Cover the orange cables with tape and keep working near them
- D. Switch off, keep the key away, and isolate the high-voltage system

19. Fine metal particles are found on the power steering reservoir screen, and the fluid looks dark. What is the correct action?

- A. Top up the reservoir with fresh fluid and return the truck to service
- B. Rotate the steer tires and check the toe setting on the axle
- C. Flush the system, replace the filter, and repair the worn pump or gear
- D. Increase the relief valve setting to clear the debris faster

20. The desiccant cartridge on an air dryer is saturated with oil and a thin film is found in the purge exhaust. What is the correct repair?

- A. Bake the cartridge in a shop oven to dry the desiccant
- B. Replace the cartridge and find and repair the oil source before returning the truck to service
- C. Replace the purge valve only and keep the old cartridge
- D. Add alcohol to the tanks daily to absorb the oil

21. A noise is heard only when the clutch pedal is depressed with the transmission in neutral, and it stops when the pedal is released. Which part is most likely failing?

- A. The clutch release bearing
- B. The main shaft rear bearing
- C. The drive axle pinion bearing
- D. The power takeoff gear set

22. An engine cranks normally but will not start, and the scan tool shows no crankshaft signal but a good camshaft signal. What is the best next check?

- A. The air filter restriction indicator on the intake housing
- B. The coolant level in the surge tank and its cap seal
- C. The cab heater blower motor resistor and its connector
- D. The crankshaft position sensor, connector, and reluctor gap

23. A coach engine loses coolant overnight with no external leak, and bubbles appear in the surge tank at idle. Which test best confirms combustion gas in the coolant?

- A. A coolant refractometer reading of freeze protection level
- B. A chemical block test on vapour above the fill neck
- C. A thermostat bench test in a container of heated water
- D. A visual check of the water pump weep hole for drips

24. Which section of a WHMIS 2015 safety data sheet gives the personal protective equipment and exposure controls for a product?

- A. Section 8, exposure controls and personal protection
- B. Section 4, first aid measures for each type of exposure
- C. Section 12, ecological information for spill and disposal
- D. Section 16, other information including revision dates

25. A refrigerated trailer's diesel unit shuts down on a low oil pressure alarm. What should the technician check first?

- A. The trailer door seals for leaks around the frame
- B. The engine oil level and condition
- C. The air ride suspension height control valve linkage
- D. The fifth wheel lock pressure and jaw condition

26. A PTO-driven hydraulic pump gives low flow at idle but adequate flow at higher engine speed. What does this show?

- A. The relief valve is set far too high for the pump rating
- B. The reservoir is overfilled with hydraulic oil above the sight line
- C. Pump flow follows drive speed, so raise the PTO speed setting
- D. The cylinder seals are leaking internally past the piston rings

27. A steering gear has excess free play at the steering wheel, but the linkage joints are tight. What adjustment is appropriate?

- A. Tighten the pitman arm nut to the maximum torque available to the bar
- B. Increase the power steering relief valve pressure setting by half
- C. Replace the steering wheel with one of a much smaller diameter
- D. Adjust the sector shaft lash at centre per the maker's procedure

28. A truck shows undercharge at high load, and a squeal is heard from the front of the engine. What should be inspected first?

- A. The starter solenoid contact points and their cable lugs
- B. The serpentine belt wear and automatic tensioner position
- C. The cab door switch circuit and the dome lamp wiring
- D. The fuel heater element resistance and relay output

29. After a drum brake adjustment, one rear wheel end becomes very hot after a short drive. What is the most likely cause?

- A. The brake is dragging from over-adjustment or a seized return
- B. The wheel bearings are lubricated with too little grease inside the hub
- C. The tire has been inflated above the recommended cold pressure
- D. The air dryer purge cycle is happening more often than it should

30. A manual transmission with a range valve will not shift into high range, and the shift lever feels normal. What should be checked first?

- A. The clutch pedal free play at the pedal pad and linkage
- B. The engine coolant temperature at the thermostat housing
- C. The fuel supply pressure at the injection pump inlet
- D. The air supply to the range valve and filter regulator

31. Pitting is found on the coolant side of a wet cylinder liner during an overhaul. What does this most strongly indicate?

- A. The engine was run with an oil level that was too high
- B. The cylinder head was torqued above its specification
- C. Depleted coolant additives allowed cavitation erosion on the liner wall
- D. Fuel injection timing was set too far advanced

32. The compressor clutch on an air conditioning system will not engage, and the system is low on refrigerant. What is the likely cause?

- A. The heater control valve is stuck closed in the cab heater line
- B. The cab air filter is clogged with dust and debris at the intake
- C. The low-pressure cutout is opening to protect the compressor
- D. The blend door actuator is out of calibration after repair

33. How should a technician set up the meter to measure parasitic battery draw on a truck?

- A. Connect the voltmeter across the battery posts with the key on
- B. Put the ammeter in series with the battery cable and wait
- C. Measure resistance across the battery terminals with the cables off
- D. Clamp a test light across the starter terminals while cranking

34. A technician measures between the front and rear of the steer tires at spindle height and reads 1,742 mm at the front and 1,747 mm at the rear. What is the toe setting?

- A. 5 mm toe-out
- B. 2.5 mm toe-in
- C. 10 mm toe-in
- D. 5 mm toe-in

35. A tractor shows low boost, black smoke, and a loss of power under load, and oil seeps at a charge air cooler hose clamp. What is the best test of the charge air system?

- A. Pressurize the charge air system and watch the pressure decay
- B. Run the engine at governed speed with the air filter removed
- C. Measure coolant temperature at the thermostat housing outlet
- D. Check fuel pressure at the secondary filter housing port

36. A tractor-trailer loses air from the primary service circuit through a broken line. Which result should be expected from a correctly functioning system?

- A. The secondary circuit keeps its pressure and a warning shows
- B. All brakes apply automatically because the primary circuit failed
- C. The secondary circuit also loses pressure at the same rate
- D. The parking brake releases to relieve the pressure difference

37. An automatic transmission overheats while a coach is climbing a long grade, and the fluid level is correct. Which check should be done?

- A. Replace the dipstick tube O-ring at the transmission case seam
- B. Reduce the idle speed setting on the engine controller module
- C. Test for flow and restriction in the transmission cooler lines
- D. Install a thicker fluid grade in the transmission sump pan

38. A 24 V circuit on a fuel heater draws 8 A. What is the circuit resistance?

- A. 0.33 ohm
- B. 3 ohms
- C. 32 ohms
- D. 192 ohms

39. The windshield wipers move slowly even with a charged battery, and the wiper motor current draw is higher than specified. What is likely?

- A. The windshield washer reservoir is empty and the pump is dry
- B. The alternator is overcharging the battery above its rating
- C. The headlamp switch is set to the low beam position
- D. Binding in the linkage or pivots is overloading the motor

40. A steer tire shows scalloped, cup-shaped wear spots at regular intervals around the tread. What is the most likely cause?

- A. A worn shock, imbalance, or loose bearing letting the tire bounce
- B. The tire was inflated to the maximum pressure on the sidewall
- C. The toe setting is slightly toe-in on the steer axle of the unit
- D. The driver braked hard with the engine brake switched on

41. Oil has pooled inside a charge air cooler on a turbocharged engine, and a light blue haze appears at idle. What is the likely source?

- A. An overfilled crankcase is forcing oil past the dipstick tube
- B. A failed thermostat is keeping coolant below normal temperature
- C. A restricted fuel return line is raising injector pressure
- D. A worn compressor-end oil seal on the turbocharger

42. A service manual calls for cylinder head bolts to be tightened using a torque-turn method. What must the technician do?

- A. Tighten to the final torque value in one step and reuse the bolts
- B. Tighten to the initial torque, then rotate each bolt the specified angle and replace the bolts
- C. Tighten each bolt until the wrench clicks twice in a row
- D. Apply thread locker and tighten to hand-tight plus one turn

43. A trailer landing gear cranks with great effort and the legs seem straight. What is the likely cause?

- A. The trailer brakes are adjusted too loosely on both axles
- B. The air tanks are overfilled with moisture from the dryer
- C. The gearbox is dry or contaminated and needs service
- D. The kingpin plate is mounted too far forward on the frame

44. What is the correct procedure to set a hydraulic relief valve?

- A. Fit a gauge, run to relief, set the pressure, and lock it
- B. Adjust the valve until the pump noise stops and then tighten it
- C. Turn the adjuster fully in to protect the pump from overload
- D. Set the valve at half of the pump's rated working pressure

45. The trailer spring brakes will not release when the driver pushes in the trailer air supply valve, though the tractor gauges read normal. Which cause fits best?

- A. The slack adjusters on the trailer are out of adjustment
- B. A blocked emergency line or a faulty tractor protection valve
- C. The compressor governor is cutting out sooner than it should
- D. The drive axle brakes are overheated after a long descent

46. A stall test on a truck with an automatic transmission shows stall speed 400 rpm below specification. What does this usually indicate?

- A. The torque converter stator is locked up permanently in place
- B. The transmission fluid is too high in level in the sump
- C. The drive axle ratio is too numerically high for the truck
- D. The engine is not making full power, so check fuel and air

47. An intake grid heater is rated 1.2 ohms on a 24 V system. What current should it draw when working?

- A. 0.05 ampere
- B. 28.8 amperes
- C. 20 amperes
- D. 25.2 amperes

48. During a turbocharger inspection, a dial indicator shows radial shaft play above specification. What is the correct conclusion?

- A. The play is normal because the shaft floats on an oil film at rest
- B. The play can be corrected by tightening the compressor housing clamp
- C. The bearings are worn, so the turbo should be replaced after the oil supply is checked
- D. The play only matters if the engine is running above 1,800 rpm

49. On a hot day, A/C high-side pressure is excessive and engine temperature rises at idle. What should be checked first?

- A. The condenser for blockage and the condenser fan operation
- B. The wiper motor for current draw on the cab side
- C. The brake drum for out-of-round wear on the steer axle
- D. The cab door seal for gaps along the lower sill edge

50. A tractor on air suspension leans to one side after sitting overnight, and the ride height is normal after the engine runs. What is the likely cause?

- A. The ride height valve is set too high on both sides
- B. One air spring or its fitting is leaking slowly
- C. The shock absorbers have too much damping
- D. The drive axle ratio is too low for the load

51. Why must only the specified coolant be used in the battery thermal loop of an electric truck?

- A. Any glycol coolant works as long as it is the same colour
- B. The loop shares its fluid with the engine coolant system
- C. Water alone is always preferred for safety reasons
- D. The correct low conductivity and parts compatibility

52. A technician finds blue heat spots and cracking on a drum friction surface. What does this condition show?

- A. The drum was cooled too slowly after the last brake job
- B. The lining is too thin and needs a different rivet pattern
- C. It was overheated by hard braking or a dragging brake
- D. The wheel bearings were over-greased at the last service

53. After a clutch replacement on an automated manual transmission, the truck launches roughly. What is required?

- A. Reset the oil pressure sensor to its default value with the tool
- B. Flush the transmission with a lighter fluid grade and refill
- C. Reduce the idle speed setting in the engine ECM file
- D. Run the clutch touch-point calibration with the scan tool

54. At rest, a healthy CAN network shows what voltage on each of the CAN high and CAN low wires, measured to ground?

- A. About 2.5 volts on each wire
- B. About 0 volts on both wires
- C. About 12 volts on CAN high only
- D. About 5 volts on CAN low only

55. A tractor overheats at idle in traffic, but the temperature gauge stays normal at highway speed. Which fault is most likely?

- A. The thermostat is stuck open and is over-cooling the engine at speed
- B. The fan clutch is not engaging, so ram air does the cooling
- C. The water pump impeller is eroded and not circulating coolant at idle
- D. The coolant has too much antifreeze concentration in the mixture

56. A tractor wanders and tracks with the rear axle off-centre to the frame centre line. What condition most likely exists?

- A. The steer tire pressure differs slightly from side to side
- B. The coolant level is low in the surge tank on the cab side
- C. The air dryer cartridge is partly saturated with moisture
- D. Worn spring hanger bushings let the axle shift out of square

57. A scan tool shows SPN 102 FMI 3 for intake manifold pressure. What does this mean?

- A. The pressure is higher than the design limit for the engine
- B. The sensor signal is below normal or shorted to ground
- C. Signal voltage above normal or shorted to a high source
- D. The data is erratic and appears only on an intermittent basis

58. An apprentice starts an engine with a fuel line loose to see where fuel is leaking. What is the best response from the journeyman?

- A. Stop the work, explain the fire and injection hazard, and demonstrate the safe leak-check method
- B. Let the apprentice finish so the leak location is found quickly
- C. Tell the apprentice to wear gloves and continue the test
- D. Ask the apprentice to keep the engine at idle to reduce risk

59. When the emergency line pressure on a trailer drops, what does the trailer relay emergency valve do?

- A. It increases the service line pressure to the brake chambers
- B. It exhausts the spring brake release air so the springs apply
- C. It closes the gladhand seals on the tractor end of the lines
- D. It resets the ABS module back to its default factory state

60. A technician builds a replacement hydraulic hose assembly. Which practice is correct?

- A. Reuse the old fittings and crimp them by hand
- B. Use the specified hose, fitting, and crimp die, and follow the crimp diameter and pressure rating
- C. Choose any hose that fits the length and diameter
- D. Use an air hose and clamps for low pressure circuits

61. An ABS wheel speed sensor sets an intermittent fault at highway speed, and the sensor tip appears worn on one side. What is the most likely cause?

- A. The air dryer is producing too much moisture in the brake lines
- B. The brake lining friction material is harder than normal
- C. The tractor protection valve is set lower than its specification
- D. A damaged tone ring tooth or hub play is touching the sensor

62. An automated manual transmission will not launch the vehicle in gear and sets a clutch actuator fault. What should be checked first?

- A. The rear axle ratio plate on the differential carrier cover
- B. The cab heater control valve and its vacuum or air line
- C. Air supply and wiring to the clutch actuator, plus wear data
- D. The fuel tank cap vent and the tank breather line

63. A truck engine takes a long time to warm up, has poor cab heat on cold days, and the temperature gauge stays low on the highway. What is the most likely cause?

- A. The thermostat is stuck in the open position
- B. The radiator cap is holding too much pressure
- C. The water pump belt is slipping on its pulley
- D. The coolant contains too little glycol

64. If the fifth wheel on a tractor is slid forward one hole, how does the weight distribution change?

- A. More weight is placed on the drive axles and less on the steer axle
- B. More weight is placed on the steer axle and less on the drive axles
- C. Weight on all axles stays the same regardless of position
- D. Weight moves to the trailer axles only

65. A fault shows SPN 174 FMI 4 on a truck. What is the correct interpretation?

- A. The fuel is too hot and needs an additional cooler fitted
- B. The fuel temperature sensor is reading erratically and drifting
- C. Fuel temperature sensor voltage below normal or shorted low
- D. The fuel filter restriction is above the allowable limit

66. A compression brake performs poorly on one bank of cylinders. Oil pressure is normal and the ECM commands the brake on. Which item should be checked next?

- A. The coolant concentration in the cooling system at the radiator
- B. The turbocharger wastegate rod length and its actuator
- C. The fuel filter restriction gauge reading at the housing
- D. The brake slave piston lash setting on the weak bank

67. Under wheel slip, the engine power drops unexpectedly while an ABS and traction control lamp flashes. What does this show?

- A. Traction control is requesting torque reduction from the engine through the data link

- B. The engine ECM has failed and needs to be replaced
- C. The brakes are applying because the parking valve leaked
- D. The fuel supply pump is losing pressure in the line

68. A driveline vibration is felt at 100 km/h, and it changes with engine speed but not with road speed when the truck is tested in different gears. What does this indicate?

- A. An out-of-balance wheel assembly at the rear axle position
- B. A worn center bearing in the driveshaft hanger assembly
- C. A source tied to the engine, such as the fan or damper
- D. A bent axle shaft in the drive axle housing assembly

69. Before tilting a cab to service the engine, which step is required?

- A. Run the engine at idle to lower the pressure in the cab mounts
- B. Secure loose items, set the parking brake, and clear the area
- C. Release the air suspension and lower the frame to the stops
- D. Disconnect the trailer air lines from the tractor gladhands

70. The heater makes gurgling noises, and the cab is cool after the cooling system was opened for service. What is the likely cause?

- A. The A/C compressor oil charge is overfilled in the system
- B. The cab filter is installed backwards in its housing
- C. The blower motor is spinning too fast at the high setting
- D. Air trapped in the heater core needs to be bled out

71. When repairing a damaged engine harness wire, which splice method is best?

- A. Solder it, or crimp with adhesive heat shrink, and stagger splices
- B. Twist the wires together and wrap them with plain electrical tape

- C. Use an uninsulated butt connector with no weather sealing
- D. Join the wires with a wire nut inside the harness cover

72. A wheel stud breaks while a technician is removing a wheel nut on a drive axle. What is the correct procedure?

- A. Replace only the broken stud and ignore the remaining studs
- B. Replace it, check the other studs and surfaces, and torque the nuts
- C. Remove the adjacent stud and run the wheel with fewer studs
- D. Weld the broken stud back in place and torque the nut

73. A cylinder contribution test shows cylinder 4 weak, and the engine starts hard. What should the technician do before replacing the injector?

- A. Replace the fuel filters and bleed the entire fuel system again
- B. Reflash the ECM with the previous calibration level loaded
- C. Increase the injection timing offset using the scan tool
- D. Check compression and valve lash on that cylinder

74. The rear brakes of a truck are slow to release after the pedal is let up, while the front brakes release normally. Which part should be checked first?

- A. The quick release or relay valve exhaust for a restriction
- B. The steering gear relief valve for pressure at the rear
- C. The fan clutch air line for leakage at its fitting
- D. The engine brake solenoid for continuity at the connector

75. A differential on a truck is leaking oil past the pinion seal, and the carrier breather is found plugged. What is the correct repair?

- A. Raise the oil level above the fill hole to cover the seal

- B. Switch to a thicker gear oil without cleaning the breather
- C. Clean the breather and replace the pinion seal
- D. Tighten the carrier mounting bolts to a higher torque value

76. Where should a technician look to find service bulletins that apply to a specific engine problem on a given truck?

- A. In the owner's manual under the maintenance schedule pages
- B. In the maker's information system using the VIN and engine serial
- C. On the cab door sticker that lists the tire pressure values
- D. In the previous repair order without checking the unit itself

77. A trailer's lights dim and flicker intermittently, and the 7-way connector shows corrosion at the ground pin. What should be done?

- A. Increase the bulb wattage on all of the trailer lights
- B. Replace the trailer batteries with larger capacity ones
- C. Clean or replace the connector and check ground voltage drop
- D. Use a thicker wire only on the left side of the trailer

78. Hydraulic oil from a work truck is dark with a burnt smell, and temperature stays high. What does this suggest?

- A. The oil is simply old and needs no further checking at all
- B. The oil level is too low for the cooler to work properly
- C. The reservoir breather is too clean and lets in no moisture
- D. Heat from a relief valve stuck open or a cooler problem

79. An engine is cranking slowly, and the alternator shows 12.6 V at 1,500 rpm. What should be checked first on the charging circuit?

- A. Battery and ground connections at the alternator, plus excitation
- B. The fuel injectors for an open coil winding in the harness
- C. The turbocharger actuator for travel and linkage movement
- D. The thermostat opening temperature at the housing outlet

80. A driver notes that dual tires on the drive axle seem to have different pressures after a long haul. What practice should be followed?

- A. Bleed the warmer tire right away to match the colder tire
- B. Check pressure cold and compare both tires of the dual
- C. Fill all of the tires to the maximum on the sidewall
- D. Ignore the difference when it is under 30 kPa between them

81. At minus 35 degrees Celsius a truck loses power, and the primary fuel filter is coated with wax crystals. What is the best correction?

- A. Add gasoline to the tank to lower the fuel freezing point
- B. Increase the fuel pressure regulator setting on the pump
- C. Bypass the primary filter until the engine warms up fully
- D. Warm it in a shop, replace the filters, and use winter fuel

82. How can a technician quickly confirm a blown fuse in a circuit without removing it?

- A. Measure voltage across the fuse with the circuit on
- B. Measure resistance across the fuse with the circuit energized
- C. Touch the fuse and feel for heat after about a minute
- D. Check the continuity of the fuse holder with the key off

83. A disc brake caliper on a coach shows one pad worn down much more than the other on the same caliper. What is the most likely cause?

- A. The brake chamber air pressure is too high on that side
- B. The rotor was machined to a high surface finish
- C. The caliper slide pins or guide bushings are seized, so the caliper cannot float evenly
- D. The wheel nuts were tightened in a star pattern

84. A tandem axle truck is driven with the inter-axle differential lock engaged on dry pavement, and the tires show scuffing and the driveline binds. What is the correct practice?

- A. Use the lock only for low-traction conditions and unlock it on dry pavement
- B. Keep the lock engaged at all times to protect the axles
- C. Engage the lock only when the truck is moving above 80 km/h
- D. Lock it whenever the engine brake is on

85. A hybrid truck with regenerative braking has thick service brake linings, but the drum surfaces are glazed and rusty. What explains this?

- A. The brake chambers are using too much air pressure on application
- B. The slack adjusters are being over-adjusted at every stop
- C. The linings are the wrong thickness for the drum diameter
- D. Regenerative braking cuts friction brake use, so surfaces glaze or rust

86. A shock absorber on a truck steer axle is found to be failed. What is the proper replacement practice?

- A. Replace the failed shock only and leave the other
- B. Replace only the shock on the driver's side
- C. Replace both shocks on the same axle as a pair
- D. Replace the shocks only if the tire wear is visible

87. A water-in-fuel lamp comes on, and the primary filter contains dark slime and the tank has traces of water. Which action addresses the cause?

- A. Replace the secondary filter only and continue operation as normal
- B. Drain the water, clean the tank, change filters, and add biocide
- C. Add methanol to the tank to absorb the water that has collected
- D. Raise the idle speed to heat the fuel supply and dry it out

88. The cab temperature is stuck on hot, and the scan tool shows the blend door actuator is not following its command. What is the correct action?

- A. Increase the A/C refrigerant charge by about one-third more
- B. Replace the heater core immediately and flush the cooling system
- C. Test the actuator and wiring, then recalibrate or replace it
- D. Install a larger radiator in the vehicle to cool the cab air

89. A relay does not click when its control circuit is energized, and the coil resistance reads infinite. What does this show?

- A. The relay coil winding is open and the relay needs replacing
- B. The relay contacts are welded together and cannot open
- C. The relay socket has a voltage drop on its output terminal
- D. The relay is working but the connected load has failed

90. An automatic slack adjuster on a trailer has excessive pushrod stroke. What is the correct approach?

- A. Back the adjuster off one turn and add grease to the clevis
- B. Find the underlying cause, such as worn brake components, instead of just manually adjusting it
- C. Replace the brake chamber with a larger size
- D. Disconnect the adjuster and lock the cam in position

91. A truck has a 3.55 axle ratio, a 0.74 top gear ratio, and tires turning 500 revolutions per kilometre. What is the engine speed at 100 km/h in top gear?

- A. About 1,850 rpm
- B. About 2,520 rpm
- C. About 1,580 rpm
- D. About 2,189 rpm

92. A technician needs to weld a bracket close to a diesel fuel tank on a truck. Which precaution is correct?

- A. Run the engine to keep the fuel moving away from the work area
- B. Fill the tank completely so that no vapour can remain
- C. Remove or fully shield the tank and keep a fire watch because fuel vapour can ignite
- D. Apply the ground clamp to the tank to shorten the circuit

93. After sliding the tandems on a trailer, what must the technician verify before moving it?

- A. The spring brake chambers are fully caged for the move
- B. The trailer tires are inflated to the maximum on the sidewall
- C. The landing gear is lowered to the ground for support
- D. All locking pins are fully extended and engaged both sides

94. A hydraulic cylinder leaks at the rod seal, and the rod surface has a deep scratch. What is the correct repair?

- A. Repair or replace the rod and fit new seals
- B. Replace the rod seal only and return the cylinder to service
- C. Apply sealant to the rod seal groove before reassembly
- D. Tighten the gland nut to the highest torque it will take

95. A scan tool shows low oil pressure at hot idle, but the oil level is correct. What should the technician do first?

- A. Replace the main bearings as a preventive step on the engine
- B. Install a mechanical gauge to verify the reading
- C. Switch to a lower viscosity oil grade without any further tests
- D. Erase the fault code and road test the vehicle once again

96. After a spring or suspension service, how should the U-bolt nuts be treated?

- A. Torque in sequence and re-torque after the set interval
- B. Tighten until the spring pad flexes and then leave them alone
- C. Use thread locker and never re-torque them after service
- D. Tighten only the outer nuts and leave the inner ones loose

97. A cab bangs and booms over rough road, and the tilt latch looks secure. What should the technician inspect?

- A. The coolant surge tank for the correct level and cap seal
- B. The fuel filter housing for water and sediment build-up
- C. The cab mount bushings and rear stabilizer for wear or cracks
- D. The compressor governor for the correct cut-in setting

98. A technician replaces a failed 2/0 battery cable with a smaller gauge cable of equal length. What is the likely result?

- A. Faster starter rotation because of the lower weight of the cable
- B. Excess voltage drop and heat in the cable while cranking
- C. Lower alternator output because of the lower cable resistance
- D. No effect at all because only the cable length matters

99. During a brake leakage check with the brakes applied, the technician hears air from the diaphragm clamp ring of one chamber. What is the repair?

- A. Tighten the clamp ring bolts until the sound disappears
- B. Replace the slack adjuster on the same axle and re-test
- C. Apply sealant around the clamp ring edge and re-test
- D. Replace the leaking brake chamber

100. How is pinion bearing preload on a drive axle checked during a carrier rebuild?

- A. By measuring the ring gear backlash with a feeler gauge
- B. By checking the axle shaft end play with a dial indicator
- C. By counting the turns of the pinion nut after hand tightening
- D. By measuring the rotating torque of the pinion with an inch-pound torque wrench

101. A technician measures high crankcase pressure and sees oil mist from the breather on a high-hour engine. What does this most directly indicate?

- A. A cracked intake manifold gasket on the cold side
- B. Excessive blow-by from worn piston rings or liners
- C. A worn camshaft lobe on the exhaust valve
- D. A seized thermostat in the closed position

102. A truck has an anti-theft system, and the engine cranks but will not start, with an immobilizer lamp flashing. What should be done?

- A. Replace the starter and the starter relay in the circuit
- B. Bypass the fuel shutoff by jumping the ECM power supply
- C. Check immobilizer status and re-learn or reset the key code
- D. Increase the cranking time to override the security system

103. Steering effort is high only at low engine speed and improves when the engine is revved. What is the most likely cause?

- A. A worn power steering pump with low flow at idle
- B. A bent front axle beam on the steer axle of the truck
- C. A loose drag link at the pitman arm and ball socket
- D. An incorrect tire size fitted on the front axle position

104. When setting valve lash by the two-pass method, which condition identifies the cylinder whose valves can be adjusted?

- A. The piston is at bottom dead centre on the exhaust stroke
- B. The rocker arm is at maximum lift on the intake valve
- C. That cylinder is on its compression stroke with both valves closed
- D. The injector is at the start of its injection event

105. Airflow from the cab vents is weak at all fan speeds, and the blower motor sounds normal. What should be inspected?

- A. The cabin air filter and the duct path for restriction
- B. The turbocharger compressor wheel for damage and rub marks
- C. The transmission oil cooler for clogging in its fins
- D. The fuel return line for restriction at the tank fitting

106. Grease is found on the lining and drum of a drive axle wheel end because of a leaking wheel seal. What is the correct repair?

- A. Clean the lining surface with solvent and reinstall it
- B. Sand the lining surface to remove the grease layer
- C. Add a thin layer of brake lubricant to protect the drum
- D. Replace the seal and the contaminated linings, and clean or replace the drum

107. A driveshaft slip yoke binds and the truck vibrates during acceleration at low speed. What is the likely cause?

- A. The transmission output seal has too much oil behind it
- B. The slip spline is dry or corroded and is binding
- C. The differential has too much backlash at the ring gear
- D. The wheel bearings have excessive end play at the hubs

108. A reluctor wheel with a missing tooth gap is checked with an oscilloscope. What should the crankshaft sensor waveform show?

- A. A steady voltage line with no changes at all
- B. A smooth sine wave with the same amplitude constantly
- C. A random pattern of pulses with no repeating sequence
- D. A repeating pattern of pulses with one clear gap at the missing tooth position

109. The serpentine belt of a truck shows cracking across the ribs, glazing, and an incorrect tensioner indicator position. What should be done?

- A. Apply belt dressing to quiet the squeal for a few weeks
- B. Replace the belt and check the tensioner and pulleys
- C. Tighten the tensioner arm with a longer wrench or bar
- D. Reuse the belt after turning it inside out on the pulleys

110. A technician needs to find out if a cylinder bore is tapered or out of round. Which method gives the correct information?

- A. Measure once at the top of the bore with a vernier caliper
- B. Check ring gap with a feeler gauge in the middle of the bore
- C. Measure with a dial bore gauge at several depths and in two directions at each depth
- D. Compare the bore to the piston skirt colour pattern

111. A trailer tracks to one side, and measurements show the rear axle is not square to the kingpin. What does this condition cause?

- A. Dog-tracking, with uneven tire wear and poor handling
- B. Faster brake lining wear on the front axle
- C. Higher air tank pressure in the supply line
- D. Lower coolant temperature in the tractor

112. A filter bypass indicator on the hydraulic return line shows red. What should be done?

- A. Reset the indicator and keep operating the machine as normal
- B. Replace the element and look for contamination sources
- C. Remove the filter altogether to improve the oil flow
- D. Increase the relief valve pressure setting by a small amount

113. A truck has white smoke and a rough run in cold weather that disappears when warm. The intake air heater has no current draw. What is the likely cause?

- A. An open grid heater element or relay is preventing preheating
- B. A leaking head gasket is sending coolant into the cylinders
- C. A restricted exhaust is causing high back pressure at idle
- D. The injection timing is set too far retarded from the spec

114. Headlamps on a truck are dim at idle but become bright when engine speed is raised. What does this suggest?

- A. The starter solenoid is stuck in the engaged position
- B. The headlamp switch has an open circuit in the dimmer
- C. The coolant temperature sensor is reading far too high
- D. Low alternator output at idle, so check drop and belt drive

115. Water is draining from the air tanks every day on a truck in humid weather, and the air dryer cartridge is only one year old. What should be checked?

- A. The slack adjusters for pushrod stroke above the limit
- B. The steering gear for fluid leakage at the shaft seal
- C. The dryer purge valve and heater, and discharge temperature
- D. The brake lining thickness on the steer axle shoes

116. A hydraulic transmission retarder on a coach overheats the engine cooling system when used on a long descent. What is the explanation?

- A. The retarder lowers the coolant flow by closing the thermostat
- B. The retarder oil mixes directly with the coolant in the radiator
- C. The retarder reduces airflow by blocking the fan clutch
- D. Retarder heat is transferred to the engine coolant, so cooling capacity must handle both loads

117. A cab-over truck has a steering column that feels notchy when turned. What is the most likely defect?

- A. A worn or binding steering shaft universal joint
- B. A restricted fuel return line between the engine and tank
- C. A leaking air dryer purge valve at the rear of the unit
- D. A cracked exhaust manifold near the turbocharger mounting

118. A DC fast charging session will not start on an electric truck. What should be checked first?

- A. The engine oil level in the sump and the dipstick marks
- B. The turbocharger boost pressure at the intake manifold
- C. The connector pins for damage or debris and charger status
- D. The air dryer purge valve and its heater element

119. A variable geometry turbocharger gives boost above specification at light load, and the scan tool shows commanded vane position differing from actual. What is the most likely cause?

- A. The air filter element is clogged with dust and fibres
- B. Carbon build-up is sticking the vanes or the actuator in a closed position
- C. The fuel rail pressure sensor reads too high
- D. The exhaust pipe has a hole upstream of the turbo

120. An engine block heater trips the shop's ground-fault circuit interrupter every time it is plugged in. Which test locates the fault?

- A. A fuel pressure test at the injection pump inlet fitting
- B. A compression test on the cylinder nearest to the heater
- C. A brake pushrod stroke test at the rear wheel ends
- D. An insulation test between the element terminals and body

121. A cab door gets water leaking in during wash, and the door seal looks compressed in places. What is the best approach?

- A. Check the seal and striker alignment, then replace the seal
- B. Add silicone sealant around the outside of the door skin
- C. Remove the seal and leave it off so the area can dry
- D. Tighten the hinge bolts without adjusting the door striker

122. A truck with an engine brake and ABS enters a low-traction stop. What should the engine brake do when the ABS activates?

- A. Increase retarding power to slow the vehicle down further
- B. Remain at the selected level so the driver feels no change
- C. Disable automatically so engine drag cannot lock the wheels
- D. Switch to the highest level to protect the service brakes

123. A truck's clutch pedal is soft and the clutch drags when shifting. A hydraulic release system is fitted. What is the first likely cause?

- A. Air in the hydraulic line or a leaking cylinder
- B. A worn driveshaft center bearing in the hanger assembly
- C. A seized fuel gauge sender in the tank assembly
- D. A loose rear spring U-bolt at the axle seat area

124. A technician sees a steer tire worn on its inside shoulder only, on one side of the truck. Which condition should be checked?

- A. The air dryer purge timing on the supply side of the system
- B. Camber, toe, or axle damage on that side
- C. The transmission oil level and its dipstick reading
- D. The compressor governor settings and cut-in pressure

125. Coolant drips from the weep hole of a water pump on a high-mileage engine. What is the correct repair?

- A. Plug the weep hole to stop the coolant loss at the pump
- B. Replace the pump because its internal seal has failed
- C. Tighten the pump pulley bolts to the specified torque value
- D. Add stop-leak to the cooling system and keep monitoring it

126. Water is dripping onto the passenger floor when the A/C is running, and the evaporator drain tube is found to be plugged. What is the correct repair?

- A. Add refrigerant to lower the evaporator temperature further
- B. Turn off the blower to reduce the amount of condensation
- C. Clear the drain tube so condensate flows out
- D. Install a larger condenser at the front of the radiator

127. An intermittent engine fault does not occur in the shop. Which method gives the best chance of capturing it?

- A. Clear the codes and return the truck to the owner as is
- B. Replace the ECM and check again at a later date
- C. Increase the idle speed in the shop and wait for the fault
- D. Use the scan tool's snapshot or data logging on a road test

128. A technician tops up an extended life coolant system with conventional green coolant because it is all the shop has. What is the correct response?

- A. Leave it because all antifreeze types are interchangeable
- B. Add extra water to dilute the mixture below normal strength
- C. Flush the system and refill with the specified coolant because the types are incompatible
- D. Increase the radiator cap pressure to offset the change

129. A diesel refrigeration unit cranks slowly in cold weather and will not start. What should be checked first?

- A. Battery load test and connections, plus the glow plugs
- B. The trailer floor drain plugs and the rubber flaps
- C. The air suspension exhaust valve on the rear axle
- D. The landing gear shoe pads and their mounting bolts

130. A directional control valve does not shift when the solenoid is energized, and voltage at the connector is correct. What is the next check?

- A. The axle ratio and the tire size on the drive axle
- B. The turbocharger boost pressure at the intake manifold
- C. The brake chamber stroke on the rear drive axle
- D. Coil resistance and the spool for sticking

131. When the emergency line pressure on a tractor-trailer combination falls suddenly, what should the tractor protection valve do?

- A. Stay open to keep the trailer tanks charged from the tractor
- B. Close and isolate the tractor supply while trailer brakes apply
- C. Open the parking brake circuit to release the tractor brakes
- D. Reduce the service line pressure to zero in an instant

132. A PTO will not engage on a truck with an electronic engine, and the control switch light flashes. What should the technician check first?

- A. The air dryer purge schedule on the supply line to the tanks
- B. The ECM's PTO enable conditions, such as park brake and speed
- C. The brake chamber pushrod stroke on the rear drive axle
- D. The engine coolant concentration in the cooling system

133. A technician lifts a steer axle and uses a dial indicator at the tire to check for vertical movement at the kingpin when the wheel is pried up and down. The play exceeds the limit. What does this show?

- A. The wheel bearings need a higher preload adjustment at the hub
- B. The tie rod ends are loose at the knuckle arms on the axle
- C. The kingpin bushings or thrust bearing are worn
- D. The tire is out of balance by a small amount at speed

134. A truck's oil temperature is high while coolant temperature stays normal and oil pressure is steady. Which component should be checked first?

- A. The thermostat for opening at the specified temperature
- B. The fuel return line for restriction at the tank fitting
- C. The charge air cooler for core leakage and cracked tanks
- D. The oil cooler for restriction or poor coolant flow

135. A technician must reprogram an ECM on a truck with a low battery. What is the correct precaution?

- A. Connect a regulated supply to hold system voltage
- B. Leave the engine off and rely on the weak battery alone
- C. Disconnect the alternator first to avoid any electrical noise
- D. Run the engine at high idle during the programming session

Practice Exam 20: Answer Key and Explanations

1. **D** — A protective derate is triggered by the ECM's reading of the oil pressure sensor, so the technician must separate a real fault from a sensor error. A gauge check settles it. Replacing parts first is premature, adding oil to a correct level is pointless, and defeating derate protection can destroy the engine.
2. **B** — Sodium, potassium, and boron are coolant additive elements, so their presence in the oil points to coolant entering the lube system, typically through an oil cooler core or head gasket. Normal silicon rules out dirt ingestion, and the viscosity drop would be steeper from fuel dilution without those coolant markers.
3. **C** — Engine mounts hold the engine in place and absorb its vibration, and when one is torn or collapsed the engine moves under load and passes vibration to the frame. Inspection for a gap or movement with a pry bar confirms it. Battery, thermostat, and wastegate faults do not cause visible engine movement.
4. **C** — Oil in the air system normally comes from the compressor, either through worn rings or because a restricted intake causes oil to be pulled past the rings. Checking intake restriction and the compressor itself finds the source. Modulators, adjusters, and the parking valve knob do not put oil into the supply side of the system.
5. **A** — Clutches and transmissions are rated for a torque limit, and increasing engine output above that rating makes the friction discs slip and wear rapidly. The calibration and component ratings must match. Excess release bearing grease, thin transmission oil, or spline lube would not make a clutch slip under load. That mismatch is why raising output needs matching driveline ratings.
6. **D** — A hot, pressurized cooling system can flash to steam and scald when the cap is released. Waiting for it to cool and turning the cap to the first stop lets pressure escape before the cap is fully removed, with the face and arms clear. Opening it quickly or at idle or releasing a hose gives no protection from scalding.
7. **B** — Trailer ABS modules need continuous power and a clean ground from the connector, so a lamp that stays on often points to missing voltage or poor contacts. Measuring voltage and ground at the connector is the first step. Lining thickness, tread depth, and landing gear lubricant do not turn on an ABS lamp.

8. C — Whining and aerated fluid indicate pump cavitation, which results from restricted suction or air entering the intake side. Inspecting the strainer, suction hose, and clamps finds the cause. The heater valve, air dryer, and transmission cooler do not feed the hydraulic pump. Checking the strainer and hose joints first is quick, and cavitation damage is costly if ignored.

9. B — A reading of minus 40 is the typical default value for an open circuit on a temperature sensor, and the ECM may command the fan on as a safeguard when it cannot trust the signal. Checking the sensor connector and wiring comes first. The other items would not drive the scan tool reading to its lowest extreme.

10. A — Silicon is the signature of dust, and rising iron and aluminum show abrasive wear on liners, rings, and pistons. Because coolant elements are normal, the oil cooler is not suspect. The path for unfiltered air is a loose clamp, cracked hose, or damaged filter seal downstream of the air cleaner element.

11. D — A heater control valve meters coolant flow through the core, and when it sticks open hot coolant flows constantly, so both hoses stay hot and the cab cannot be cooled. A stuck blend door can act the same way, but hot hoses point to the valve. Thermostat and compressor faults would not keep the cab hot.

12. A — A radiator is supported on rubber isolators that protect it from frame vibration, and when they are missing the core flexes and cracks at the tank seams. Replacing the core without restoring the isolators will repeat the failure. Concentration, cap pressure, and fan speed are not the cause of seam fatigue.

13. C — Carbon in the discharge line restricts flow, raising head pressure and heat, and it often means oil carry-over or high discharge temperature. Cleaning or replacing the line fixes the restriction, but the technician must also find why carbon formed. Restriction does not speed tank build-up, and it does not change application pressure.

14. D — Excess runout causes the clutch disc and pressure plate to wobble, producing vibration, chatter, and rapid wear. It must be corrected by resurfacing or replacing the flywheel, or correcting the housing alignment. A new clutch will not wear in to cure the runout, and the pilot bearing cannot compensate. Resurfacing or replacing the flywheel brings runout back within limits.

15. B — Cab air springs support the cab and isolate vibration, and a leak at the bag or line lets that corner sink when the supply bleeds off. Leak testing the bag and fittings is the correct step. Thermostat, turbo, and compressor intake faults do not change cab height. Soap solution on the fittings confirms the leaking spring.

16. A — Sensors of this type often share a regulated five-volt reference from the ECM, so one short on that line pulls all of them down and sets multiple codes together. Testing the reference voltage and wiring locates the single fault. Replacing sensors or reflashing wastes time, and a fuel filter cannot cause electrical faults.

17. C — A rising level with a fuel smell and thin oil is classic fuel dilution. Raw fuel reduces viscosity and flash point, which accelerates bearing wear. Coolant contamination would turn the oil milky, a stuck bypass would not add volume, and a turbo seal leak would lower the level rather than raise it.

18. D — Hybrids can start the engine automatically, and high-voltage components remain energized unless the system is shut down and isolated by the manufacturer's procedure. Switching off, keeping the key away, and disabling the HV system protects the technician. Ready mode, a 12 V disconnect, or taping cables does not. Following the maker's isolation steps protects against hidden voltage.

19. C — Metal in power steering fluid shows the pump or steering gear is wearing internally and shedding debris through the circuit. The fluid must be flushed, the filter replaced, and the source repaired, or the debris will damage the new part. Topping up, rotating tires, or raising relief pressure will not remove contamination.

20. B — Oil coats the desiccant beads, which prevents them from absorbing moisture, so the cartridge cannot be reconditioned. A new cartridge will fail again unless the oil source, usually the compressor or its intake, is corrected. A purge valve alone does not remove contamination, and alcohol does not remove oil. Skipping the source check lets contaminated air return within weeks.

21. A — A release bearing turns only when the pedal is pushed and it contacts the pressure plate fingers, so a noise that exists only during pedal travel points to it. Rear main shaft and axle bearings would make noise while the vehicle moves, and a PTO gear set noise depends on the PTO being engaged.

22. D — Most engines need the crankshaft signal for timing and rpm, and some can start on the camshaft signal only in a limp mode. No crank signal means the sensor, wiring, or tone ring gap should be checked. Air filter indicators, coolant level, and the heater blower are not related to the signal.

23. B — Bubbles with unexplained coolant loss suggest combustion pressure is leaking past a head gasket or through a crack. A chemical block tester draws vapour from the cooling system through blue test fluid that turns yellow with exhaust gas. Freeze protection, thermostat opening, and a weep hole show other faults, not combustion gas.

24. A — A 16-section SDS follows a fixed order, and Section 8 lists exposure limits, engineering controls, and the required gloves, eye protection, and respirators. First aid appears in Section 4, ecological effects in Section 12, and revision dates and other notes in Section 16, so those sections would not list the equipment needed to handle the product.

25. B — A low oil pressure shutdown is a protection against engine damage, and the simplest cause is low oil. Checking level and condition comes first, followed by sensor and pressure tests. Door seals, ride height valves, and the fifth wheel lock do not affect the unit's oil pressure. Topping up and checking for leaks is the cheapest first step.

26. C — A fixed-displacement pump delivers flow in proportion to its speed, so low engine speed gives low flow even when nothing is wrong. Using the PTO or ECM high idle setting raises the speed. A high relief setting, overfilled reservoir, or leaking seals do not explain a speed-dependent change. Always compare flow needs with the pump's rated speed before blaming components.

27. D — Free play in the gear itself is controlled by lash between the sector gear and the worm or ball nut, and it is adjusted at the centre of travel, where wear is least. The service manual defines the procedure. Overtightening the nut or raising relief pressure does not remove free play.

28. B — A slipping accessory belt reduces alternator speed and output, and the squeal under load is a sign. Checking belt condition, glazing, and the tensioner's indicator mark finds the cause quickly. Starter contacts, door switches, and fuel heaters do not influence alternator output. A new belt or tensioner restores alternator speed and output.

29. A — A hot wheel end after a brake adjustment suggests the shoes are not fully releasing, either because they are adjusted too tight or because a cam, return spring, or anchor is seized. Bearing or tire problems could also create heat but are not tied to the recent adjustment, and the dryer purge does not affect a single wheel.

30. D — Range shifts on many heavy-duty transmissions are controlled by air pressure from a filter regulator, so a loss of air supply, a blocked filter, or a leaking line prevents the shift while the manual lever feels normal. Pedal free play, coolant temperature, and fuel pressure are not part of range shifting.

31. C — Liner vibration creates tiny vapour bubbles on the coolant side that collapse and erode metal when inhibitors such as nitrite are depleted. Regular test strips and correct additive levels prevent it. High oil level, head bolt torque, and injection timing do not erode the liner's outer wall. Test strips taken during routine service show when to restore additive levels.

32. C — A low-pressure switch stops the compressor when refrigerant and oil flow are inadequate, protecting it from damage. The leak must be found, repaired, and the system recharged. The heater valve, cab filter, and blend door do not control clutch engagement. Recharging after a leak repair restores the pressure the switch needs to close.

33. B — Parasitic draw is the current drawn with the vehicle off, so it must be measured with an ammeter in series with the circuit. Modules can take 20 to 30 minutes to go to sleep, and measuring too early shows false high readings. A voltmeter, resistance check, or test light would not measure current flow.

34. D — Toe is the difference between the rear and front measurements, and when the front measurement is smaller, the tires point inward. The difference is 1,747 minus 1,742, which is 5 mm of toe-in. Toe-out would show a larger front measurement, and the other values do not match the readings. Measure at spindle height with the truck rolled.

35. A — Boost leaks let compressed air escape before it reaches the cylinders, so the air-fuel ratio goes rich and smoke increases. A pressure decay test, using regulated shop air and a gauge, finds leaking hoses, clamps, and cooler cores without running the engine. The other checks do not test the air path.

36. A — Dual air brake circuits are separated by protection valves so that one circuit failing does not drain the other. The driver gets a low-air warning and still has partial braking from the secondary circuit. Automatic application of all brakes happens only when the spring brake supply drops, not simply because one service circuit leaks.

37. C — A transmission can overheat when its cooler or lines are restricted, preventing heat from leaving the fluid under high-load conditions like hill climbing. Checking cooler flow and lines is the logical next step. A new dipstick O-ring does not cool fluid, and a thicker fluid or lower idle speed does not help.

38. B — Ohm's law gives resistance as voltage divided by current, so 24 volts divided by 8 amperes is 3 ohms. A value of 0.33 results from dividing current by voltage, 32 comes from adding the two quantities, and 192 comes from multiplying them instead of dividing, so none of those use the correct relationship.

39. D — A wiper motor that draws excess current but moves slowly is working against friction, such as seized pivots or bent linkage, or has internal wear. Measuring current and checking the linkage by hand separates these. An empty washer tank, an alternator fault, or the headlamp setting does not slow the wiper motor.

40. A — Cupping forms when a tire repeatedly bounces on the road because of an imbalance, worn shock, or play in the wheel end. Inspection of those parts is necessary. Over-inflation gives centre wear, toe problems cause feathering, and engine braking does not produce cupped wear on a steer tire. Checking and replacing worn parts stops the cupping from recurring.

41. D — Oil in the charge air path comes from the turbo shaft seals or from a plugged crankcase breather pushing oil into the intake. Blue haze at idle shows oil burning. Coolant temperature and fuel return restrictions do not move oil into the charge air cooler, and an overfilled sump alone would not appear there.

42. B — Torque-turn, or torque-to-yield, bolts are stretched into their elastic range by a specified angle past an initial torque, and this gives a consistent clamping load. Because they are permanently stretched, they must be replaced. A single torque figure, a double click, or thread locker does not produce the designed clamp load.

43. C — A heavy cranking effort with straight legs often comes from lack of lubrication or dirt in the landing gear gearbox. Servicing the gearbox restores smooth movement. Brake adjustment, tank moisture, and kingpin position do not change the effort to crank the landing gear. Packing fresh grease and checking the legs for wear restores smooth operation.

44. A — Relief valves are set with a gauge so the actual pressure is read when flow is forced over the valve, and the lock nut keeps the setting. Setting by noise, fully tightening, or arbitrary fractions risks damage or unsafe pressure. The manufacturer's specification determines the setting. Following the maker's pressure value keeps components within their ratings.

45. B — Spring brakes release only when emergency line air reaches the trailer relay valve and tanks. If gauges at the tractor read normal but the trailer stays locked, the line, the gladhand, or the protection valve is blocking air. Slack adjuster travel, governor cut-out, or hot drive brakes would not hold the trailer's springs applied.

46. D — Stall speed depends on engine torque meeting the converter's load, so a result well below specification usually means the engine is weak because of fuel, boost, or air faults. A mechanically locked stator would raise stall speed rather than lower it, and fluid level or axle ratio does not cause that reading.

47. C — Current equals voltage divided by resistance, so 24 volts divided by 1.2 ohms gives 20 amperes. A value near 0.05 results from inverting the formula, 28.8 results from multiplying instead of dividing, and 25.2 results from adding the two numbers, so these would not describe what the element draws under rated conditions.

48. C — Turbo shafts float on bearings, but excessive radial play lets the wheels contact their housings and causes failure. Because starved or dirty oil usually destroys the bearings, the supply line, drain, and oil condition must be checked before installing a new unit. Housing clamps and engine speed do not change bearing clearance.

49. A — A blocked or poorly cooled condenser raises head pressure and adds heat to the air that passes through the radiator, so both the A/C and the engine run hot. Cleaning the condenser and checking the fan solves both. Wipers, drums, and door seals have no effect on these pressures. Cleaning debris from the fins restores airflow for both cooling systems.

50. B — Air springs hold the load with air pressure, so a slow leak makes that side sag overnight, and running the compressor brings the system back to height. Soap solution on the bag and fittings finds the leak. A high valve setting would not create a lean, and axle ratio and damping do not affect ride height.

51. D — High-voltage thermal loops use fluids with specified conductivity and material compatibility, because leaks near high-voltage parts can create hazards. A mix of colours or plain water can damage parts or reduce protection. An electric truck does not share coolant with an engine system. Using the approved fluid avoids conductivity faults and seal damage in the loop.

52. C — Blue discolouration and heat checks form when a drum is heated beyond its design limits, usually from severe braking or a brake that does not release. The metal's structure is weakened, so the drum must be replaced rather than simply turned. Cooling speed, lining rivet pattern, or bearing grease do not cause these marks.

53. D — An automated manual transmission control unit learns the clutch touch point from the old clutch, and a new clutch engages at a different position. Without a calibration, launch will be rough or slip. Resetting a pressure sensor, changing fluid, or lowering idle does not fix the learned engagement. The touch point must match the new disc.

54. A — In the idle or recessive state, both CAN wires sit near 2.5 volts, and during messages CAN high rises toward 3.5 and CAN low falls toward 1.5 volts. Zero volts on both, or full battery or five volts on one wire, would indicate a short, an open, or a failed transceiver rather than a healthy bus.

55. B — At highway speed, ram air through the radiator can mask a weak fan drive, but at idle only the fan moves air. A fan clutch that stays disengaged therefore causes heat build-up in traffic only. A stuck-open thermostat lowers temperature, and a failed pump would overheat the engine at speed too.

56. D — A rear axle that is not square to the frame produces dog-tracking, and worn bushings, loose U-bolts, or damaged hangers let the axle shift. Measuring the axle's position relative to the kingpin or frame reveals it. Small tire pressure differences, coolant level, and air dryer condition do not move an axle.

57. C — SPN 102 identifies intake manifold pressure and FMI 3 is a voltage above normal or short to a high source, so it describes the electrical signal, not actual boost. FMI 4 is below normal or short to ground, and FMI 2 is erratic data, so those do not match this code.

58. A — Pressurized diesel can spray onto hot surfaces and ignite, and high-pressure fuel can penetrate skin. A mentor must stop unsafe practice immediately, explain why it is dangerous, and demonstrate the correct inspection method. Allowing the work to finish or merely adding gloves or lower speed leaves the hazard in place.

59. B — Trailer spring brakes are held released by supply air, and when emergency line pressure falls, the relay emergency valve exhausts the spring brake release air and the brakes apply. This protects the trailer in a breakaway. The valve does not raise service pressure, close tractor gladhands, or reset the ABS module.

60. B — A hydraulic hose assembly depends on a matched hose and fitting, and the crimp diameter must be correct to hold working pressure. Reused fittings or random hose types can blow off. Air hose and clamps are not rated for hydraulic pressure, even on low pressure circuits. Always follow the crimp specification on the hose maker's chart.

61. D — The sensor tip should hover over the tone ring with a small gap, and rubbing marks mean the ring is damaged or the hub has excessive play, so the signal becomes erratic at speed. Fixing the cause matters, not just replacing the sensor. Dryer moisture, lining hardness, and the protection valve setting do not wear a sensor tip.

62. C — The actuator uses air pressure and electrical commands to move the clutch, so supply, wiring, and wear readings are the most likely areas. The axle ratio plate, heater valve, and fuel cap vent have no part in launching the truck in gear. Repair of supply or wiring faults restores actuator movement.

63. A — A thermostat stuck open lets coolant flow through the radiator constantly, so the engine runs under its normal operating temperature, which also reduces the heater output. Low glycol would affect freeze protection, a slipping pump belt would cause overheating, and a high-rated cap would raise, not lower, temperature. Replacing the thermostat with the correct temperature rating restores normal operating range.

64. B — The fifth wheel carries the trailer's front weight, and moving it forward brings that load closer to the steer axle, increasing steer axle weight and decreasing drive axle weight. Moving it back does the opposite. Axle loads depend on its position, and the trailer axles are not changed by tractor fifth wheel position alone.

65. C — SPN 174 is engine fuel temperature, and FMI 4 means voltage below normal or a short to a low source. The technician should check the sensor and wiring. The code does not report actual fuel

temperature or filter restriction, and erratic data would use a different failure mode identifier. Check the harness and connector before replacing the sensor.

66. D — Compression brakes open the exhaust valves near top dead centre using a master and slave piston motion, so incorrect lash prevents full valve opening and reduces retarding power. With oil pressure and ECM commands normal, a lash check on the weak bank is the logical step. Coolant, wastegate, and fuel filter checks do not affect braking.

67. A — Many trucks with ABS and automatic traction control request reduced engine torque over the J1939 network when a drive wheel slips, and a flashing lamp reports the event. This is normal operation, not a failure. A failed ECM would set fault codes, and parking valve or fuel pump faults do not link to wheel slip.

68. C — Vibrations that follow road speed come from wheels, axles, or driveshafts, while those that follow engine rpm come from the engine or its accessories. Testing in different gears separates the two groups. Wheel balance, center bearings, and axle shafts all follow road speed. Road-testing in several gears shows whether the vibration follows engine or road speed.

69. B — Tilting a cab changes the load on the lifting system, so loose objects can fall and the tilt path must be clear. The parking brake keeps the truck from moving, and the safety prop or lock should be used before working underneath. Idling, dumping the suspension, or disconnecting trailer lines does not make tilting safe.

70. D — Opening the cooling system lets air in, and trapped air in the heater core blocks flow and causes gurgling. Bleeding at the high point or using a vacuum refill method restores circulation. Compressor oil, filter orientation, and blower speed do not make the heater gurgle. Parking the truck nose-up while bleeding helps air escape from the core.

71. A — Engine harnesses face vibration, heat, and moisture, so repairs must be mechanically strong and sealed. A soldered splice or a crimp covered with adhesive-lined heat shrink does this, and staggering the splices avoids a bulge. Tape, uninsulated connectors, and wire nuts loosen and let in moisture, causing intermittent faults. Heat shrink should cover each splice fully so it stays sealed.

72. B — A broken stud often means the others are fatigued or overloaded, so the technician replaces it, checks the neighbouring studs, nuts, and mounting surfaces, and torques to specification. Running with fewer studs or welding a stud is unsafe, and ignoring the others could leave another stud ready to fail. Fresh studs and clean mounting faces keep the clamp load even.

73. D — A weak cylinder can come from injector faults, but also from low compression or incorrect valve lash, which produce the same low power contribution. Verifying mechanical condition first prevents replacing a good injector. Changing filters or reflashing does not isolate one cylinder, and altering timing offsets disguises the real problem.

74. A — Rear brake chambers exhaust through a relay or quick release valve close to the chamber, and if its exhaust port is plugged or the valve sticks, air leaves slowly and the brakes drag. Front brakes

releasing normally points to a rear-only component. The steering, fan, and engine brake parts are not part of the rear brake exhaust path.

75. C — A plugged breather lets heat expand the air in the axle, which pressurizes the housing and pushes oil past the seals. Cleaning the breather removes the cause and a new seal fixes the leak. Raising the level adds pressure, and thicker oil or bolt torque will not relieve the pressure.

76. B — Technical service bulletins are issued by build date, engine family, and software level, so the VIN and engine serial number narrow the search to those that apply to this exact truck. Owner's manuals, door labels, and old repair orders do not contain current bulletins and may point to the wrong procedures.

77. C — A poor ground pin raises resistance, and under load it drops voltage, causing dim or flickering lamps. Repairing the connector and measuring voltage drop confirms the fix. Higher wattage bulbs draw more current and make the problem worse, and trailers do not use batteries for the lamps. Clean contacts and a solid ground restore full lamp brightness.

78. D — Dark, burnt oil shows it has been overheated, which results from relief valve flow, internal leakage, or a cooler that cannot remove heat. The technician must find the heat source and change the oil and filters. Treating it as old oil ignores the cause, and a clean breather is not a fault.

79. A — A battery-level reading at 1,500 rpm means the alternator is not charging, which could be from poor connections, a missing excitation feed, or a failed unit. The B-plus and ground paths and the field supply are the easiest and most informative checks. Injectors, turbo actuators, and thermostats do not affect charging.

80. B — Tire pressure rises with temperature, so adjusting pressure while hot gives an inaccurate result, and the specified pressure refers to cold inflation. Both tires of a dual should be checked and matched cold so they share the load. Bleeding a hot tire or overfilling both leaves them incorrect. Matching cold pressures keeps both tires sharing the load evenly.

81. D — Wax crystals form when fuel cloud point is higher than ambient temperature and they plug filters. Warming the vehicle, replacing plugged filters, and using fuel treated or blended for the climate fixes the cause. Adding gasoline is dangerous and harms injectors, and bypassing a filter exposes the injection system to contamination.

82. A — A good fuse drops almost no voltage, so measuring across it with the circuit loaded reads close to zero, but an open fuse shows nearly full system voltage. Measuring resistance in an energized circuit gives false results and can damage a meter, and a fuse that is blown does not warm up.

83. C — A floating caliper must slide freely so that both pads clamp the rotor evenly. When pins seize, the inner or outer pad is pushed harder and wears faster. Higher chamber pressure would affect both pads, and rotor finish or wheel nut tightening order does not cause uneven pad wear. Servicing the pins and bushings restores even pad contact.

84. A — Locking the inter-axle differential forces both axles to turn at the same speed, and on dry pavement during turns this causes scrubbing, windup, and tire wear. The lock is meant for slippery

surfaces and should be released when traction returns. High speed or engine braking is not a reason to lock it.

85. D — Regenerative braking slows the truck through the drive motor, so friction brakes do little work and can glaze or rust from lack of use. Periodic inspection, cleaning, and use are needed. Excess chamber pressure or over-adjustment would cause wear and heat, not thick linings. Regular inspection and use of the friction brakes prevents rust and glazing.

86. C — Shocks wear together, and a new one beside an old one gives unequal damping that can cause pulling or uneven handling and tire wear. Replacing both shocks on the axle gives balanced control. Leaving the old shock or waiting for tire wear lets the problem continue. Replacing in pairs also keeps ride height and handling consistent.

87. B — Dark slime and water indicate microbial growth that lives at the water and fuel boundary. Removing the water, cleaning the tank, replacing the filters, and using a biocide treatment deals with the cause. Replacing one filter leaves the colony, and alcohol additives or higher idle speed will not remove the contamination.

88. C — Blend doors direct air through the heater or evaporator, and an actuator that does not follow commands leaves the door in one position. Testing the actuator and circuit and then recalibrating or replacing it corrects the problem. Adding refrigerant, a new core, or a bigger radiator do not address the door position.

89. A — A relay coil should read a small resistance, often around fifty to a hundred ohms, and an infinite reading means the coil winding is open, so it cannot create a magnetic field to move the contacts. Welded contacts would still allow the coil to click, and load faults do not change the coil's resistance.

90. B — Automatic adjusters compensate for normal lining wear, so excess stroke means something is wrong, such as a worn cam bushing, bent hardware, or the adjuster itself. Manual adjustment hides the symptom and may hide a safety defect. Changing chamber size or locking the cam would create unsafe braking conditions. Fixing the root cause keeps the brake in adjustment between services.

91. D — Wheel speed is 500 revolutions per kilometre times 100 kilometres per hour divided by 60, or about 833 rpm. Multiplying by the axle ratio 3.55 and the transmission ratio 0.74 gives about 2,189 rpm. The other values come from using an inverted ratio or leaving a factor out of the multiplication.

92. C — Welding sparks and heat can ignite fuel vapour even with diesel, so the safest approach is to remove the tank or shield it, and to keep a fire watch after the work. Running the engine does nothing for safety, a full tank can still vent vapour, and a ground clamp on the tank risks arcing near the fuel.

93. D — A sliding tandem is held in place by locking pins, and if one is partly engaged the tandem could shift under braking. The technician checks each pin visually and by movement. Caging brakes, over-inflating tires, and lowering the landing gear are unrelated or unsafe actions. A quick walk-around of each pin prevents a shifting tandem under braking.

94. A — A scored rod cuts new seals and leaks again, so the rod must be repaired, polished, or replaced as part of the job. Installing seals alone, adding sealant, or overtightening the gland will not stop the leak

and may damage the cylinder. Seals installed on a damaged rod fail early, so the surface must be corrected.

95. B — Sensor circuits and transducers can fail and report false low pressure. A mechanical gauge at the engine's test port confirms actual pressure and separates a real lubrication problem from a sensor fault. Opening the engine or changing oil grade without verification risks unnecessary work, and clearing the code does not diagnose the cause.

96. A — U-bolts clamp the axle to the spring, and settling occurs after installation, so they are torqued in sequence to the specified value and checked again after the stated interval. Overtightening without a torque value, or skipping the re-torque, risks loosening, axle movement, and broken bolts. Following the maker's interval keeps the axle seated and clamp load correct.

97. C — Worn cab mount bushings or a failed rear stabilizer let the cab move on the frame, which causes banging and booming over bumps even when the latch is secure. Looking for cracked rubber, loose bolts, and weak shocks finds the fault. Coolant level, fuel filters, and the governor have no effect on cab movement.

98. B — Cable resistance depends on cross-sectional area and length, so a smaller gauge cable has higher resistance and drops more voltage during high-current cranking, giving slow cranking and heated cables. Weight does not make a starter faster, and extra resistance does not increase alternator output. Matching cable gauge to the starter's current need prevents hard starting.

99. D — Air at the clamp ring means the diaphragm is torn or the chamber housing no longer seals, so the chamber is replaced. Over-tightening a clamp ring can distort it, and sealants cannot hold air pressure in a flexing diaphragm. The slack adjuster does not control diaphragm sealing. Replacing the chamber also lets the stroke be checked on the new unit.

100. D — Preload on tapered roller bearings is set by crushing a spacer or using shims, and the rotating torque measured with an inch-pound wrench shows whether the bearings are correctly loaded. Backlash and axle shaft end play are different adjustments, and counting nut turns does not give a reliable load value.

101. B — Combustion gases leaking past worn rings pressurize the crankcase and push oil mist out the breather. A manometer reading above specification confirms it. A manifold gasket leak affects intake air, a worn cam lobe reduces valve lift, and a closed thermostat causes overheating, none of which raise crankcase pressure. Rebuilding or replacing the worn parts restores compression.

102. C — The immobilizer prevents fuel and starting unless the ECM recognizes the key or code, and a flashing lamp indicates the system has not authorized the engine. The scan tool shows status and lets the technician follow the manufacturer's reset or re-learn procedure. Replacing starters or bypassing the ECM does not address the lockout.

103. A — Pump flow rises with engine speed, so a worn pump or a drive belt slipping delivers too little fluid at idle but enough when revved. A bent axle, loose drag link, or different tire size would cause

constant steering problems rather than speed-related effort. Replacing the pump or belt restores flow at idle speed.

104. C — Lash must be measured when the valve is fully seated on the base circle of the cam. A cylinder at top dead centre on the compression stroke has both valves closed, so the lash reading is correct. At bottom dead centre exhaust or maximum lift, a valve is open or moving and the measurement would be false.

105. A — A normal blower with weak airflow points to an upstream restriction such as a clogged cabin filter or a blocked duct. Replacing the filter is the simplest check. The turbo, transmission cooler, and fuel return line are not part of the cab ventilation path. Replacing the filter often fixes weak airflow right away.

106. D — Oil or grease soaks into friction material and cannot be cleaned out, so contaminated linings reduce braking and pull the vehicle to one side. The new seal fixes the source, and the drum is cleaned or replaced. Solvent or sanding only spreads or buries the contamination, and lubricant on a friction surface is unsafe.

107. B — A slip yoke must slide as the suspension moves, and a dry or corroded spline binds and creates a jerky load on the driveline, which shows up as vibration under acceleration. Lubricating or replacing the spline fixes it. Seal oil, backlash, and wheel bearing play do not create this binding.

108. D — The ECM finds engine position from the one-per-revolution gap in a regularly spaced tooth pattern, so a healthy waveform has regular pulses and a distinct gap. A flat line means no signal, a pure sine wave is a different sensor type, and a random pattern shows damage or noise. Comparing the waveform to a known good pattern confirms the diagnosis.

109. B — Cracked, glazed belts lose grip and fail soon, and an indicator outside its range means the belt is stretched or the tensioner is weak. Replacement should include checking pulleys and the tensioner. Belt dressing, extra tension, or turning the belt over do not restore proper function. Replacing the belt and checking the tensioner prevents a repeat failure.

110. C — Wear in a bore is greatest near the top of ring travel and differs between the thrust and axial directions, so a dial bore gauge reading at several depths and in two directions reveals taper and out-of-round. A single caliper reading or a ring gap check does not map the shape, and a colour pattern is not a measurement.

111. A — A trailer axle that is not square to the kingpin makes the trailer follow a different path than the tractor, causing dog-tracking, scrubbed tires, and handling issues. Alignment is measured and corrected at the hangers. Lining wear on the front axle, tank pressure, and coolant temperature are not caused by the condition.

112. B — A bypass indicator shows that the filter is restricted and oil is passing around it unfiltered. The element must be replaced, and contamination sources should be found. Resetting the indicator or removing the filter leaves the system unprotected, and raising relief pressure does not help. Fresh filter elements restore protection and flow cleanly.

113. A — Cold cylinders cannot ignite fuel well, so unburned fuel appears as white smoke until the engine warms. An intake heater that draws no current means the element, fuse, or relay is open. Head gasket leaks would not disappear when warm, and timing or exhaust restriction would show regardless of temperature.

114. D — Lamps that brighten with engine speed show that system voltage rises when the alternator spins faster, meaning output at idle is low from belt slip, weak output, or voltage drop in the charging path. A stuck solenoid or a dimmer switch fault would not change with rpm, and the coolant sensor is unrelated.

115. C — A working dryer removes moisture before it reaches the tanks, so continued water means the purge valve is sticking, the heater is failing, or hot discharge air is overwhelming the desiccant. Slack adjusters, steering fluid, and lining thickness do not affect moisture in the supply system. Replace the cartridge if the dryer cannot remove moisture.

116. D — A hydraulic retarder turns braking energy into heat in its fluid, which is cooled through a heat exchanger connected to the engine coolant. During long descents, the retarder adds heat, and if the radiator, fan, or coolant is weak, temperature climbs. The retarder does not block the thermostat, mix oil with coolant, or disable the fan.

117. A — A notchy feel at the steering wheel means one of the shaft's universal joints is binding or worn, and in a cab-over layout the long column shaft has several joints. The fuel return line, air dryer, and exhaust manifold have no link to steering feel. Replacing the joint restores smooth, light steering movement.

118. C — A charging session starts only after the charger and vehicle exchange signals over the connector pins, so damaged or dirty pins and a charger fault message are the first things to check. An electric truck has no engine oil or turbocharger, and the air dryer is not part of the charging process.

119. B — A VGT controls boost by moving vanes, and when carbon or a faulty actuator keeps them closed, exhaust energy is concentrated and boost rises beyond the commanded value. Comparing commanded and actual position on the scan tool exposes this. A clogged filter lowers boost, and an upstream leak also reduces turbo drive.

120. D — A ground-fault device trips when current leaks to ground, and a block heater element with failed insulation or water intrusion leaks current to the metal body. Testing between the terminals and the body with a meter finds that leak. Fuel, compression, and brake tests are not related to the circuit.

121. A — Water leaks at a door usually come from a worn or compressed seal or a door that is out of alignment, so the correct repair is to replace the seal and adjust the striker and gaps for even contact. Sealant or an absent seal leaves gaps, and tightening hinges alone does not correct alignment.

122. C — Engine brakes add retarding torque to the drive wheels, which can cause them to slip on a slippery surface, so ABS-equipped trucks switch the engine brake off during an ABS event. Increasing or maintaining retarding power would make wheel lock more likely. This design keeps steering control during a low-traction stop.

123. A — A soft pedal and a clutch that does not fully release mean the hydraulic system is not moving the release fork its full travel, which is typical with trapped air or leaking cylinders. Bleeding the system and inspecting the cylinders for seeps is the correct start. Driveshaft bearings, fuel senders, and U-bolts are unrelated.

124. B — Wear on one shoulder points to an alignment angle problem such as excessive camber or toe, or damage to the axle or spindle on that side. Inspecting those parts is the necessary step. The air dryer, transmission oil, and governor do not affect steer tire wear. Correcting the angle restores even tire wear.

125. B — The weep hole is a deliberate escape path that shows when the internal shaft seal is failing, and coolant there means the seal and often the bearing have worn out. Plugging it hides the problem and risks bearing damage, and stop-leak additives can restrict the radiator and heater core. Replacement is the proper repair.

126. C — The evaporator cools and dehumidifies air, producing condensate that leaves the case through a drain tube, and when the tube is plugged the water backs up into the cab. Clearing the tube solves it. Refrigerant, blower settings, and condenser size do not remove the water. A blocked drain is a common cause after a heavy season of use.

127. D — Intermittent faults are hard to find because they occur only under certain loads or temperatures. Logging or triggering a snapshot of live data during a road test records the values at the moment of the event. Clearing codes removes evidence, and replacing the ECM guesses without proof. Review the logged data against the complaint to isolate the circuit.

128. C — Different coolant chemistries use different inhibitor packages, and mixing them can reduce protection and cause gelling or deposits. When incompatible coolant has been added, the system should be flushed and refilled with the type the engine manufacturer specifies. Diluting with water or raising cap pressure does not restore corrosion protection.

129. A — Cold temperatures reduce battery output and increase the engine's cranking load, so a weak battery or high-resistance connection is the first suspect, with the intake heater or glow plugs next. Floor drains, suspension exhaust valves, and landing gear shoes have no effect on starting. Replacing weak batteries and cleaning terminals restores cranking speed.

130. D — With correct voltage at the connector, the coil may be open or the spool may be stuck by contamination or a bent body. Measuring coil resistance and checking spool movement separates the two. Axle ratio, boost pressure, and brake stroke have no bearing on a valve not shifting. Replace the coil or clean the spool body as the tests show.

131. B — On a sudden loss of emergency pressure, the tractor protection valve closes so the tractor keeps its air, and the trailer's emergency valve applies its spring brakes. Staying open would drain the tractor, and the valve does not release brakes or zero the service circuit on its own. This isolation protects the tractor air supply and braking ability.

132. B — Electronic PTO systems only allow engagement when the vehicle is in a safe condition, which commonly includes the parking brake set, zero speed, and the transmission in neutral. A flashing light

indicates a condition has not been met. Air dryer cycles, pushrod stroke, and coolant strength are not conditions of PTO engagement.

133. C — Vertical movement measured with the axle supported and the wheel pried up and down shows wear in the kingpin bushings or the knuckle thrust bearing, which alters steering geometry and causes wander and uneven tire wear. Wheel bearing preload and tie rod ends are checked in other ways, and balance does not produce play.

134. D — When oil runs hot but the cooling system gauge is normal, the transfer of heat between oil and coolant is the weak link, so a plugged oil cooler core or restricted coolant side is the likely cause. A thermostat issue would change coolant temperature too, and fuel return and charge air faults do not directly raise oil temperature.

135. A — A voltage drop during programming can interrupt the data transfer and leave the module corrupted. A regulated supply holds steady voltage for the whole flash. Relying on a weak battery is risky, an unplugged alternator reduces stability, and running the engine can create voltage swings and dangerous conditions. Always monitor voltage until the flash is complete.