

PRACTICE EXAM 22: CANADIAN 310T TRUCK AND COACH TECHNICIAN SIMULATION (135 QUESTIONS)

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

1. A technician checks parasitic draw on a coach by placing an ammeter in series at the battery. The reading is 4.2 A immediately after the key is turned off. What should be done before judging it?
 - A. Wait for the modules to sleep, then reread the current
 - B. Condemn the alternator right away without more testing of any kind
 - C. Start the engine to see whether the draw rises at idle
 - D. Disconnect the battery ground and then reconnect it for a minute

2. A tractor shows oil mist in the intake pipe after the air filter and rising crankcase pressure at high load. Which cause best explains both findings?
 - A. A failed engine oil thermostat on the cooler circuit under load
 - B. A weak fuel lift pump starving the high-pressure pump at idle
 - C. Worn turbocharger seals letting oil and blow-by into the intake
 - D. A restricted cabin air filter in the heating system in winter

3. A bus's power steering pump whines at cold start and the fluid in the reservoir is foamy. What is the most likely cause?
 - A. Worn brake linings on the steer axle at the front wheels
 - B. Air entering from low fluid or a leaking suction hose

- C. A failing alternator charging too slowly
- D. A slipping clutch at the flywheel

4. A tractor's governor cuts in at 480 kPa and cuts out at 690 kPa, but the specification is cut-in near 585 kPa. What is the most likely fault?

- A. A leaking trailer glad hand at the rear coupling
- B. A cracked brake drum on the front steer axle
- C. A governor out of adjustment or faulty
- D. A worn kingpin in the fifth wheel plate

5. A truck judders badly when taking off, and the clutch housing shows oil seepage from the engine's rear seal. What is the most appropriate repair?

- A. Adjust the pedal free play and nothing more
- B. Replace the rear main seal and the soiled clutch disc
- C. Add friction modifier to the transmission lubricant
- D. Replace the release bearing and leave the disc

6. A technician must measure a 38.10 mm crankshaft-style journal on a shop test piece to within 0.01 mm. Which instrument is the correct choice?

- A. A 0 to 25 mm outside micrometer with a feeler gauge added
- B. A steel rule read carefully under a magnifying glass
- C. A 150 mm dial indicator clamped to a magnetic base
- D. A 25 to 50 mm outside micrometer zeroed on its standard

7. A refrigerated trailer's diesel unit cranks but will not start in minus 25 degree Celsius weather. Which check comes first?

- A. Fuel gelling and the glow plug or intake heater circuit

- B. The condition of the rear door seal
- C. The kingpin lock on the fifth wheel
- D. The evaporator defrost timer settings

8. A hydraulic system's oil sample shows a cleanliness code far above the target level, and spool valves stick. What is the best action?

- A. Flush the system, replace filters, and find the source
- B. Add a thicker fluid to the reservoir
- C. Raise the relief valve pressure setting
- D. Cover the return filter with tape

9. An absorbent glass mat battery is charged by a shop charger set for a constant 16 volts with no current limiting. What is the likely result?

- A. Faster charging with no ill effects on the cells
- B. Sulphation of the plates from chronic undercharging
- C. Overheating and drying of the mat, shortening battery life
- D. A lower self-discharge rate during storage periods

10. An oil sample from a bus engine shows sodium and potassium far above normal along with a low viscosity reading. Which fault is most likely?

- A. Dust leaking in through the air filter housing
- B. An internal coolant leak into the oil
- C. Normal wear on the camshaft followers and lifters
- D. Overfilling of the crankcase beyond the full mark

11. A battery-electric truck has weak cabin heat, and its high-voltage resistive heater is suspected. What must the technician do before touching the heater's orange cables?

- A. Turn the cabin fan up to maximum speed
- B. Remove the cabin air filter from its housing
- C. Drain the windshield washer fluid reservoir
- D. Follow the shutdown procedure and verify zero voltage

12. A technician checks free play at the steering wheel on a parked truck with the engine running. The wheel rim moves excessively before the tires respond. What does this suggest?

- A. Low tire tread depth on the steer axle only
- B. A weak starter motor on the engine
- C. Wear or looseness in the linkage, gear, or column joints
- D. A cracked windshield on the passenger side

13. A trailer's spring brakes remain applied after the tractor's supply is connected and the parking valve is pushed in. System pressure reads 280 kPa and is rising slowly. What is the correct action?

- A. Cage the springs with the bolts and drive away
- B. Open the tank drain to relieve the whole system
- C. Disconnect the service line and move off slowly
- D. Let pressure build above the release range before moving

14. A clutch pressure plate shows blue heat discolouration and the disc is glazed. The clutch pedal had no free play. Which explanation fits the finding?

- A. Constant release bearing contact caused slipping and overheating
- B. The transmission oil was overfilled at the last service
- C. The air dryer was saturated with moisture
- D. The tires were underinflated on the drive axle

15. A tractor's cab rides low on one side and rattles over bumps. The rear cab air spring is found deflated. What is the correct repair?

- A. Add spacers under the driver seat base to the seat frame
- B. Repair the leaking cab air spring and verify ride height
- C. Tighten the seat belt anchor at the floor at the floor rail
- D. Replace the cab tilt cylinder and nothing else for the repair

16. The charging indicator flickers at idle and the battery voltage swings, and a belt squeal is heard as the engine is revved. Which inspection is most relevant?

- A. The windshield washer motor and its pump hose
- B. The air dryer purge valve and its heater
- C. The fifth wheel lubrication and the plate
- D. The serpentine belt and the tensioner condition

17. Pitting is found on the outside of the wet cylinder liners of a vocational engine at its coolant side. Which condition most strongly contributes?

- A. Using the correct fifty percent glycol coolant mix
- B. A high oil filter bypass valve setting
- C. Low coolant additive level allowing cavitation erosion
- D. A clean and unrestricted radiator core

18. Before working near a hybrid truck's high-voltage cables, a technician checks Class 0 insulating gloves. Which step is part of the inspection?

- A. Inflate to test for leaks, check the date, add leather covers
- B. Wear them wet to improve the grip on cables during the job
- C. Use gloves with small cuts if they look clean
- D. Skip the check because the gloves are new

19. After an alignment, a truck drives straight but the steering wheel spokes sit off to one side. What adjustment centres the wheel?

- A. Change the toe setting on one steer tire only
- B. Lengthen or shorten the drag link with the road wheels straight
- C. Add air to the steer tire on the high side
- D. Set the gear sector preload to its maximum value

20. A new wheel-speed sensor is being fitted in a clip-style bushing on a steer axle. Which installation step is correct?

- A. Fit a 3 mm shim between the sensor and ring
- B. Tighten the sensor firmly against the ring with a wrench
- C. Push the sensor in until it touches the tone ring
- D. Leave the sensor loose in the mounting bracket

21. A transmission drain-plug magnet shows fine yellow-bronze particles mixed with the oil after a heavy-haul season. What do these particles most likely come from?

- A. Failed engine pistons
- B. Worn brass synchronizer rings or bushings
- C. A cracked brake drum
- D. Clutch facing wear debris

22. A modern alternator is controlled by the engine module through the vehicle network. The charging voltage stays at 12.6 volts at 1500 rpm, and the alternator tests mechanically sound. What is the best next test?

- A. Replace the starter motor and its cable ends
- B. Check all tire pressures with a calibrated gauge
- C. Replace the cab air filter in the HVAC box
- D. Check the network voltage command and regulator control circuit

23. A technician finds a foamy, light-coloured oil film on the dipstick, and the oil level reads above the full mark. What is the most reasonable first conclusion?

- A. Coolant or fuel may be diluting the oil; confirm the source first
- B. The oil is so fresh that the level looks high
- C. The dipstick is only calibrated for synthetic oil
- D. Foaming is a normal sign of a warm engine

24. A click-type torque wrench is dropped onto a concrete floor and lands on its head. What is the correct next step before it is used on a safety-critical fastener?

- A. Take it out of service until it is recalibrated
- B. Wind it to maximum and back to relax the spring
- C. Keep using it because the click still sounds normal
- D. Add a small allowance to every reading it gives

25. A trailer's ABS warning lamp stays on and flashes a stored fault pattern when the diagnostic button is used. What is the next step?

- A. Replace the brake drums on both axles
- B. Turn off the ABS circuit and drive on and keep driving
- C. Read the flash code, then test that sensor or circuit
- D. Lower the tire pressure on all wheels

26. A pump whines and the oil is foamy. The suction strainer is clogged. Which condition is the whine tied to?

- A. Excess cab heater coolant flow
- B. Cavitation from restricted suction
- C. Brake lining wear on the rear axle
- D. Tire imbalance at highway speed

27. Cupped, scalloped wear appears on a steer tire, and a shock absorber is found leaking. What is the most reasonable cause?

- A. Excess engine power at the drive wheels
- B. A leaking tail lamp on the left
- C. An overfilled coolant tank in the engine bay
- D. Worn shocks let the tire bounce and wear in patches

28. A starter solenoid only clicks, yet a load test shows the battery is good. Voltage at the solenoid's large terminal is 12.4 V, but the small control terminal shows 5.0 V during cranking. What is the most likely fault?

- A. A seized transmission input shaft in the housing after a long layover
- B. A failed alternator diode in the rectifier
- C. A leaking fuel injector at the cylinder head
- D. A voltage drop in the control circuit from a poor connection

29. An ABS fault code for a wheel-speed sensor appears only below 15 km/h and clears at road speed. The sensor and wiring pass tests. What should be inspected next?

- A. The trailer tail lamp wiring harness at the connector
- B. The cab tilt lock on the left side
- C. The tone ring for a cracked or missing tooth
- D. The coolant overflow bottle cap and level

30. A range-shift on a multi-speed manual transmission will not complete, and the driver hears air leaking at the shift valve. What should be checked first?

- A. Air supply pressure and leaks in the range circuit
- B. The clutch lining thickness and the disc hub in service
- C. The axle ratio listed on the tag plate on paper
- D. The wheel nut torque on the drive axles at all

31. A vehicle with a variable-geometry turbocharger has low boost under load and a stored actuator-position error. Which test is the best next step?

- A. Replace the turbocharger straight away without testing
- B. Command the actuator and compare commanded and actual position
- C. Raise idle speed to force more boost from the unit
- D. Clear the code and road test the truck only

32. A coach's air conditioning cools well at highway speed but turns warm at idle in hot weather. Which fault fits best?

- A. A restricted heater core in the cab
- B. A low windshield washer fluid level
- C. A condenser fan that is not running or turns too slowly
- D. A seized wheel bearing on the rear axle

33. A repaired data-link wire pair is tested and found to have its twists removed over a 30 cm section. What is the main risk?

- A. Higher battery voltage across the data wires
- B. Reduced noise rejection causing intermittent communication errors
- C. Lower alternator output at idle speed
- D. A rise in fuel pressure at the rail

34. A coach develops a steering-wheel shimmy at 85 to 95 km/h. Wheels are balanced. What should be checked next?

- A. The fuel tank level in the saddle tanks each trip
- B. The A/C compressor oil level and charge at that time
- C. The air dryer cartridge and its purge valve each week
- D. Wheel bearing adjustment and loose steering or suspension parts

35. White exhaust smoke, falling coolant level and wet soot in the EGR passages on a long-haul tractor suggest which failure?

- A. An internal leak in the EGR cooler
- B. A leaking turbocharger oil drain tube
- C. A worn nozzle in a fuel injector
- D. A blocked crankcase breather on the valve cover

36. With the parking brakes released, air blows steadily out of the service chamber's exhaust port on a wheel. What does this indicate?

- A. A worn S-cam bushing at the brake spider
- B. A ruptured diaphragm in the spring-brake section
- C. Normal air pressure equalization across the chambers
- D. A loose slack adjuster clevis pin on the pushrod

37. A technician mixes two different synthetic transmission lubricants in a manual transmission refill without checking approval. What is the main risk?

- A. The transmission will shift much faster afterward
- B. The oil level will drop automatically in service
- C. The clutch will wear less over the long term
- D. Incompatible additives may reduce protection and harm seals

38. A relay's coil is checked with a meter and reads infinite resistance between its coil terminals. What does this indicate?

- A. A good coil of normal resistance for this relay
- B. A shorted coil drawing far too much current
- C. An open coil, so the relay cannot operate
- D. A welded contact set only, with the coil intact

39. Wind noise and water entry are found around a coach driver door that closes properly. Which inspection is most useful?

- A. Door seal condition and striker alignment, checked with paper
- B. Engine compression measured at each cylinder
- C. Alternator output measured at the battery posts
- D. Transmission range selection at the shift tower

40. A technician drills a new mounting hole in a frame rail to attach a bracket. Which location is acceptable?

- A. In the web, away from the flanges, at the specified spacing
- B. Through the top flange close to a bend of the frame rail
- C. At the edge of the bottom flange
- D. Anywhere that is convenient for the bracket

41. A diesel particulate filter has been regenerated repeatedly, yet restriction returns quickly and the ash load figure is high. What is the correct service action?

- A. Run a stationary regeneration every single shift
- B. Have the ash cleaned off the vehicle or replace the filter
- C. Delete the differential pressure sensor from the circuit
- D. Add extra exhaust fluid to the reductant tank

42. Before mounting a new bench-grinder wheel, a technician suspends it on a finger and taps it lightly with a plastic handle. A dull thud instead of a clear ring indicates what?

- A. A wheel that is too soft for steel work
- B. A wheel that needs a heavier flange
- C. A normal sound for a resin-bonded wheel
- D. A possible crack, so the wheel must be discarded

43. LED marker lamps on a trailer work only when the connector is wiggled. The lamps are good. Which repair is best?

- A. Fit higher wattage lamps in every marker
- B. Wrap the cable in tape at the connector
- C. Clean the terminals, repair corrosion, and apply dielectric grease
- D. Disconnect the ground wire at the frame

44. A technician routes a new high-pressure hydraulic hose with a tight twist so that it fits neatly. What is the likely outcome?

- A. A longer hose life because of the neat route
- B. A higher system pressure rating at the fitting
- C. A smoother pump operation under heavy load
- D. A much shorter hose life, since twisting weakens the braid

45. An automatic slack adjuster is found at excess pushrod stroke after a technician has reset it. Which action is correct?

- A. Find why it loses adjustment, such as worn cam bushings
- B. Back off the adjuster nut one full turn
- C. Increase the brake application air pressure
- D. Replace the pushrod boot and nothing else

46. In a stall test on an automatic-equipped truck, the engine reaches only 60 percent of the specified stall speed. Which fault is most likely?

- A. Slipping clutch packs inside the transmission
- B. A weak engine that cannot load the converter
- C. A leaking drive axle seal at the hub
- D. A worn kingpin in the fifth wheel jaws

47. A 15 A fuse protecting a fan circuit keeps blowing, so an apprentice proposes fitting a 30 A fuse. What is the correct response?

- A. Fit the 30 A fuse to stop the repeated failures
- B. Replace the fuse with a bolt-in link instead
- C. Do not upsize it; find the short and repair it
- D. Remove the fuse and run the circuit unprotected

48. A downstream NO_x sensor reads high even though the dosing pump pressure is normal. An inspection finds hard white crystals at the dosing nozzle. What is the most likely issue?

- A. Deposits partly blocking the nozzle so too little fluid reaches the catalyst
- B. A weak starter relay on the engine harness
- C. Air in the fuel supply line before the filter and a dirty strainer
- D. A failed thermostat holding the engine too cold

49. Ice forms on a bus evaporator core, and airflow in the cabin is weak. Which inspection is the most useful first?

- A. The engine thermostat in the cooling housing on the engine
- B. The kingpin on the fifth wheel plate on the tractor
- C. The steering gear on the front axle on the bus
- D. A restricted cabin filter or weak blower reducing airflow

50. An air suspension truck sits low at the rear, and the levelling valve linkage is bent. What is the correct repair?

- A. Add air to the springs and leave it overinflated
- B. Straighten or replace the linkage and reset ride height
- C. Replace the shock absorbers and change nothing else
- D. Reduce the compressor governor pressure setting

51. A battery-electric truck will not start charging at a station. The vehicle shows a connection fault at the charge port. Which check is most appropriate?

- A. Replace the brake chambers on the rear axle at the next stop
- B. Flush the engine cooling system and refill it
- C. Inspect connector pins for damage and check the pilot circuits
- D. Adjust the clutch release linkage at the fork

52. After a hard application on a bus, the rear brakes release slowly even though the pedal is up. Which component is most likely the cause?

- A. A low washer fluid level in the reservoir
- B. A worn drive axle bearing in the carrier
- C. A restricted quick-release valve or exhaust path
- D. A defective tail lamp on the left side

53. After fitting a new clutch in an automated manual transmission, the truck engages gears roughly. Which procedure is necessary?

- A. Replace the transmission oil with a thicker grade as the first step
- B. Adjust the clutch pedal free play to specification before any road test
- C. Bleed the power steering system at the pump and replace the seal
- D. Run the clutch calibration or touch-point learn with the scan tool

54. A 12 V lighting circuit carries 30 A through a wire and connection with a combined resistance of 0.02 ohm. What is the voltage drop?

- A. 1.5 V
- B. 0.6 V
- C. 0.0007 V
- D. 600 V

55. A technician finds engine oil that smells strongly of diesel and measures thinner than specification on a unit that idles long hours. Which condition is most likely?

- A. Fuel dilution from leaking injectors or long idling
- B. Coolant additive depletion over a long interval
- C. A failed dipstick tube seal letting in air
- D. Normal viscosity gain from age over many months

56. A leaf-spring tractor is returned after U-bolt replacement, and the axle appears slightly shifted. What follow-up service is needed?

- A. Loosen the bolts by one full turn
- B. Add shims between the spring leaves
- C. Replace the wheels on that axle
- D. Retorque the U-bolts after the first loaded run

57. A technician finds a weather-pack connector terminal pushed back so that a pin does not make contact. Which tool should be used to release it?

- A. A terminal removal tool made for that connector family
- B. A flat screwdriver pried into the seal area
- C. Needle-nose pliers pulling hard on the wire
- D. A heat gun to soften and melt the housing

58. A new hydraulic cleaner arrives in a pail without its supplier label. A technician needs first-aid and spill-response information. Which part of the safety data sheet is read first for first aid?

- A. Section 9, physical and chemical properties
- B. Section 13, disposal considerations
- C. Section 4, first-aid measures
- D. Section 15, regulatory information

59. A trailer shows wear on one side of the tires on both axles, and the trailer tracks to the side after a curb strike. What should be done?

- A. Add air to the tires on both axles
- B. Measure axle alignment to the kingpin and frame, then correct it
- C. Replace the wheel bearings and nothing else
- D. Change the trailer lamps at the rear

60. When tightening a hydraulic hose fitting, a technician holds the adjacent fitting with a second wrench. Why?

- A. To make the hose slightly longer for routing on this job
- B. To lower the oil temperature in the line in the system
- C. To increase the pump flow through the fitting at the pump
- D. To stop the hose twisting or the neighbouring joint loosening

61. A tractor's brakes release normally, but its trailer brakes drag after each stop. Gladhand pressure is normal. What is the most likely cause?

- A. A sticking trailer relay valve that fails to exhaust
- B. A low tractor fuel level in the saddle tank
- C. A worn fifth wheel plate under the trailer
- D. A cracked rear view mirror on the cab door

62. An automated manual transmission will not shift after the air pressure drops below the normal range. What is the most reasonable explanation?

- A. The clutch pedal is worn at the bushings on the left
- B. Its shift actuators use air, so low pressure prevents shifts
- C. The engine oil is low in the sump in the pan
- D. The cab tilt latch is open on the right at idle

63. A fleet unit repeatedly starves of fuel in winter, and the filter bowl shows a cloudy layer at the bottom. What should the technician do first?

- A. Replace the injector pump and recalibrate the fuel module
- B. Raise the idle speed permanently and add fuel conditioner
- C. Drain the water and test the fuel for wax
- D. Remove the fuel filter completely and run the line dry

64. A tandem rear-axle truck shows a loud creak over bumps and uneven tire wear between axles. Which suspension item is most likely worn?

- A. The wiper arms
- B. The walking-beam centre bushings
- C. The cab air filter
- D. The coolant hoses

65. A coolant temperature sensor circuit shows 0 V at the sensor's 5 V reference pin with the sensor unplugged. What is the best next test?

- A. Replace the temperature sensor with a new one
- B. Replace the thermostat and refill the system
- C. Flush the cooling system with a cleaner
- D. Back-probe the reference at the module connector

66. A tractor puffs blue smoke on the first start after sitting overnight, then clears, and oil use is slightly high. Which component is the likely source?

- A. Leaking injector O-rings at the fuel rail
- B. A failed EGR cooler core in the exhaust
- C. Worn valve stem seals letting oil seep into the cylinders
- D. A cracked cooling jacket in the cylinder head

67. Oil is found in the tractor's air tanks, and the dryer cartridge is saturated. What is the best first conclusion?

- A. The compressor is passing oil; check it and its air source
- B. The tractor protection valve is leaking at its seat after a long downgrade
- C. The slack adjusters were over-lubricated at service
- D. The brake pedal bushing is dry and sticking

68. A truck produces a clunk when the throttle is released and reapplied, and a vibration at one speed. Cross play is felt at a universal joint. What is the likely cause?

- A. Overinflated tires on the rear drive axle
- B. A worn cross and bearing cups in the joint
- C. A weak thermostat in the cooling housing
- D. A leaking fuel line near the filter head

69. A cab door lock actuator clicks when the key fob is used, but the lock does not move. What is the most likely cause?

- A. A disconnected or broken lock linkage rod inside the door
- B. A weak battery in the key fob
- C. A blown trailer marker lamp fuse
- D. A worn clutch pedal bushing

70. The blower on a truck works only on the highest speed setting. What is the likely fault?

- A. A worn drive axle on the rear tandem at highway speed
- B. A leaking brake chamber on the front axle on the left side
- C. A failed blower resistor or speed module for low speeds
- D. A cracked radiator cap on the cooling system in the dash

71. An engine coolant temperature sensor is a negative-temperature-coefficient thermistor. How does its resistance behave when the engine is cold?

- A. Resistance is low and then rises as the engine warms
- B. Resistance stays about constant at all temperatures
- C. Resistance reads zero ohms at any temperature
- D. Resistance is high and drops as the engine warms

72. A sliding fifth wheel will not show a locked indicator after the driver moves it. What should be done before towing?

- A. Tow slowly with the lock only partly engaged
- B. Secure the trailer with chains and go
- C. Lubricate the kingpin and tow as before
- D. Correct the lock until it fully engages and shows locked

73. A technician sets valve lash far tighter than the specification on an overhead-cam engine. Which long-term problem is most likely?

- A. Burned valves from poor seating
- B. Excess valve noise at idle only
- C. Higher fuel economy
- D. Lower oil temperature

74. A brake hose to a rear chamber is swollen with a soft bulge near its fitting, and the brake releases slowly. What is the correct action?

- A. Tighten the hose clamp and keep driving
- B. Wrap the bulge with electrical tape for support
- C. Replace the hose, because its inner lining has likely separated
- D. Cut off the damaged inch and refit the end

75. A long wheelbase truck has a driveline vibration, and the centre support bearing rubber is split with the shaft sagging. What should the technician do?

- A. Add weights to the driveshaft at random points
- B. Replace the centre bearing and check driveline alignment
- C. Change the engine oil and the oil filter
- D. Tighten the cab mounts and the radiator bracket

76. During a pre-use check of a shop chain hoist, a technician finds the safety latch missing from the load hook. What action is correct?

- A. Tag it out of service until the hook is repaired
- B. Use it only for loads under half the rating
- C. Tie the load chain back with wire at the hook
- D. Keep the load low to the floor while lifting

77. A refrigerated trailer unit trips on high discharge pressure and cools poorly. The condenser coil is caked with dirt. What is the correct action?

- A. Add more refrigerant at once to the system
- B. Disconnect the pressure cutout switch for the trip
- C. Fill the unit crankcase with extra lubricant
- D. Clean the condenser coil and recheck pressures

78. To test a hydraulic relief valve setting, the technician fits a gauge at the pressure port. What condition is needed to read the valve's setting?

- A. Let the cylinder move freely through its stroke
- B. Dead-head the circuit so flow goes across the relief valve
- C. Disconnect the pump drive shaft completely
- D. Drain the reservoir to the lowest level

79. A Hall-effect crankshaft sensor is checked with an oscilloscope. Which waveform is expected at cranking speed?

- A. An alternating wave whose amplitude grows with speed
- B. A flat line sitting at ground with no change at any speed
- C. A square wave of constant amplitude whose frequency rises with speed
- D. A steady line at battery voltage with no pulses

80. A fifth-wheel plate is found dry and shiny with signs of kingpin wear. Which action is best?

- A. Leave the plate dry to reduce dirt buildup at all times of year
- B. Add lubricant to the brake chamber pushrod
- C. Replace all the tires on the drive axles
- D. Clean and lubricate the plate and check kingpin and jaw wear

81. A compression-release engine brake fails to engage, and the dash shows no electrical fault. Which condition should be checked first?

- A. Engine oil pressure and level at the brake supply
- B. Heater valve operation inside the cab control panel each year
- C. Tire inflation pressure on the rear drive axles each week
- D. The windshield washer pump and its spray nozzles each month

82. A cooling fan is controlled by a 12 V pulse-width-modulated signal at 50 percent duty cycle. What average voltage does a meter in DC mode approximately show?

- A. About 12 V
- B. About 24 V
- C. About 6 V
- D. About 0 V

83. To compare brake balance on a truck, a technician fits gauges at each axle's chamber test port and applies the brakes at a constant pressure. What does the test measure?

- A. The thickness of the lining on each brake shoe
- B. Whether each brake gets the expected pressure
- C. The preload applied to each wheel bearing
- D. The oil carryover from the air compressor

84. A slip yoke clunks at take-off because its splines are dry and worn. Which service step prevents a repeat?

- A. Wrap the splines in tape before assembly begins each time
- B. Replace the transmission oil twice in a row each month
- C. Install a thicker clutch with a higher rating each trip
- D. Grease the slip yoke at the fitting on schedule

85. A hybrid bus will not go into its ready state, and the 12 V auxiliary battery is found very low. What is the best explanation?

- A. The traction battery can be jump-started from a truck like a 12 V one
- B. The engine oil is low in the sump
- C. The controllers and contactors need 12 V power to start high voltage
- D. The cabin air filter is dirty and restricted

86. A tire loses about 70 kPa a week with no visible damage, and soapy water shows bubbles at the base of the valve stem. What is the correct repair?

- A. Fill the tire with sealant and keep driving
- B. Replace the valve stem or valve core, then recheck for leaks
- C. Raise the inflation pressure by 70 kPa
- D. Rotate the tire to a different axle position

87. A coach engine takes a long time to warm up, and the cab heater blows only lukewarm air in winter. The thermostat is suspected. Which finding confirms a stuck-open thermostat?

- A. The upper hose warms at once and coolant stays cool
- B. Coolant temperature climbs far beyond the normal range
- C. The upper hose stays cold for the entire trip in all weather
- D. Oil pressure rises well above the normal value

88. A heater core is partly blocked. Which observation supports this when the engine is hot?

- A. Both hoses are the same temperature on touch
- B. The inlet hose is hot but the outlet hose is much cooler
- C. Both hoses are cold on a hot engine
- D. The outlet hose is hotter than the inlet hose in all driving conditions

89. A trailer's tail lamps are dim and flicker only when the tractor is connected. Voltage at the trailer lamps is low, and lamps are normal on a bench supply. Which test should be done?

- A. An oil pressure test at the main gallery port on a warm engine
- B. A coolant concentration test with a refractometer
- C. A tire tread depth measurement on the steer tires
- D. A voltage drop test on the ground path at the connector

90. A tractor's trailer supply valve will not stay pushed in even with the trailer disconnected. What does this suggest?

- A. A low steering fluid level in the pump reservoir
- B. A loose license plate on the rear bumper
- C. A leak in the supply or protection circuit
- D. A worn clutch release bearing in the bell housing

91. A differential makes a whine only when the driver lifts off the throttle on a long downgrade, and not when pulling. Which diagnosis is best supported?

- A. Coast side wear or adjustment trouble, so the axle is inspected
- B. A weak alternator not charging at low speed
- C. A loose steering gear mounted on the frame
- D. A dirty cabin air filter in the dash box behind the glovebox

92. A wheel-hub bolt specification is written for dry threads, but a technician applies nickel anti-seize to the threads before tightening to the listed value. What is the most likely result?

- A. Under-tightening, because the lubricant swells the thread
- B. Over-tightening, because less torque is lost to friction
- C. No change at all, since torque never depends on friction
- D. Thread cracking caused by the lubricant itself

93. The rubber seal on a trailer's glad hand is cracked and leaking at the coupling. Which step is correct?

- A. Use more force when coupling the glad hands
- B. Leave it and tighten the air tank drain
- C. Plug the leak with a wrap of tape
- D. Replace the seal and check the sealing surfaces

94. Hydraulic fluid in a work truck's reservoir looks milky and cloudy. What is the most probable cause?

- A. Water entering through the breather or a leaking cooler
- B. Excess pump pressure heating the fluid
- C. A worn wheel bearing at the front axle
- D. A low tire pressure on one dual

95. A viscous fan clutch on a tractor stays fully locked and loud at cold start, even when the engine is cold. What is the most likely cause?

- A. A low battery charge reducing fan motor speed on the engine
- B. A restricted fuel filter limiting engine power output at engine idle
- C. A failed clutch with lost fluid or a stuck valve
- D. A worn tie-rod end in the steering system at the front

96. A hub-piloted wheel is to be installed on a hub that uses flange nuts. The technician only has stud-piloted wheel hardware. What is the correct approach?

- A. Do not mix systems; get the correct hub-piloted hardware
- B. Use the stud-piloted nuts anyway and torque them each time
- C. Tighten them extra hard to compensate for it on both sides
- D. Fit a thicker washer behind each flange nut every time

97. A driver's seat belt retractor has locked normally in tests, but the belt webbing is cut near the buckle. What should the technician do?

- A. Trim the frayed edge and keep the belt
- B. Sew over the cut with strong thread
- C. Replace the belt assembly; damaged webbing is unsafe
- D. Cover the cut with strong tape

98. A telematics module wired directly to the battery is draining the batteries over a weekend. What is the correct repair?

- A. Add a larger battery bank to cover the loss as a long-term fix
- B. Correct the wiring to a switched supply or repair the module sleep
- C. Remove the alternator belt over the weekend
- D. Replace the fuel filter at the next service

99. A truck-tractor driven without a trailer locks its drive wheels easily on dry pavement. Which feature is meant to reduce this tendency?

- A. A tire pressure monitor warning the driver of low inflation
- B. A higher ratio axle with taller tires installed
- C. A larger fuel tank adding weight over the frame
- D. A bobtail proportioning valve reducing drive axle brake pressure

100. The differential-lock indicator on a drive axle does not come on when the driver selects lock, and air is heard to leak at the axle. What is the most likely issue?

- A. Worn brake linings on the drive axles
- B. Air leakage at the shift cylinder or its line
- C. A low coolant level in the overflow tank
- D. A leaking tire valve cap on the inner dual

101. After a radiator-cap replacement, a bus boils over at lower temperatures than before. A cap rated lower than specification was fitted. Why does this cause early boiling?

- A. Lower pressure raises the boiling point of coolant
- B. Higher pressure thins the coolant mixture inside
- C. Lower pressure lowers the coolant boiling point
- D. The cap changes the opening of the thermostat

102. All the gauges on a bus dash behave erratically at the same time, and the engine runs normally. Which check is the most logical first?

- A. The thickness of the brake lining on each axle
- B. The fan blade angle on the cooling module
- C. The level in the windshield washer reservoir
- D. Power, ground, and data supply at the instrument cluster

103. A technician refills an oil-lubricated steer hub through the fill hole with the vehicle on a slope. What is the likely result?

- A. A false level that can overfill or underfill the hub
- B. A perfect level in all cases at any angle
- C. A cooler wheel end during highway use
- D. Increased tire pressure on that wheel position

104. A truck leaks oil at several seals, and a crankcase pressure test shows high pressure at the breather. What is the correct repair?

- A. Service the crankcase ventilation filter and check blow-by
- B. Add much thicker oil to stop every leak
- C. Replace every seal without doing any testing first
- D. Tighten the oil filter an extra full turn

105. After repairing a leak in an A/C line, the system will not hold vacuum during a hold test. What does this indicate?

- A. The system is ready to be charged now for now
- B. A leak remains and must be found before charging
- C. The compressor has too much oil inside at once now
- D. The refrigerant in the cylinder is too cold for now

106. A coach's ABS warning lamp stays on after the key is turned on and no wheel-speed codes are stored. Which check is most appropriate?

- A. Coolant concentration in the cooling circuit loop
- B. Air conditioning belt tension on the engine front
- C. Wiper blade wear on the windshield glass
- D. Power and ground supply to the ABS controller

107. Gear oil is found on the inside of a brake drum with a clean axle breather. A technician has found a worn wheel seal. What must be done before the vehicle returns to service?

- A. Clean the lining with a shop rag and reuse it to save time
- B. Add more oil to the axle housing and drive off right away
- C. Replace the seal, check hub and bearing, and replace soaked linings
- D. Leave the drum off and ship the unit as is to save cost

108. Before reflashing an engine control module, a technician connects a stable battery maintainer. Why is this required?

- A. A voltage drop during programming can corrupt the software
- B. The reflash needs the engine running at full load
- C. The maintainer improves the speed of communication
- D. The module needs to charge the battery during update

109. A battery-electric bus uses regenerative braking, and the driver reports less regeneration and a different pedal feel on a cold morning with a full battery. What is the likely explanation?

- A. The friction brakes have been removed by the maker
- B. The battery limits charge acceptance, so friction brakes do more
- C. The tires carry too much pressure for regeneration
- D. The steering is out of alignment at the axle

110. A technician needs a thread-locking compound for a bolt that must be removed with hand tools at the next service. Which grade is appropriate?

- A. High-strength red threadlocker
- B. Retaining compound for press fits
- C. Medium-strength blue threadlocker
- D. Gasket sealant rated for coolant

111. A trailer's rear impact guard is bent and its mounting bolts are loose after a loading dock collision. What should the technician do?

- A. Leave it because the damage is only cosmetic to save repair cost
- B. Straighten it cold and leave the bolts loose
- C. Paint over the bend and return the trailer
- D. Repair or replace the guard to the required strength and position

112. A pressure-compensated pump delivers no flow and the drive shaft is turning. The case drain flow is also very low. Which action is the most sensible?

- A. Replace the wheels on the drive axles
- B. Drain the fuel tank and refill it
- C. Check reservoir level, suction line, and shaft coupling first
- D. Add coolant to the engine radiator

113. A truck shows low oil pressure only at hot idle, and the gauge reading is steady at 70 kPa. Which step best separates a gauge problem from a real pressure problem?

- A. Replace the oil pan gasket and recheck the light
- B. Change to a thinner oil grade and test again
- C. Disconnect the battery for ten minutes and restart
- D. Fit a mechanical gauge at the port and compare

114. A fusible link in a battery feed is being replaced. Which rule applies to the replacement?

- A. Use a link two sizes larger than the circuit wire for the repair
- B. Use the specified link, typically four sizes smaller than the circuit wire
- C. Use ordinary wire of the same size as the circuit for the repair job
- D. Use a copper bolt as a bypass for the link for this repair

115. A compressor discharge line on a coach is found heavily coated with carbon inside. What is the main concern?

- A. Restricted discharge raises compressor temperature and cuts output
- B. The tanks will fill faster than they did
- C. The lining on the brake shoes will wear faster
- D. The cab heater will output more heat to the cab

116. A driver keeps the inter-axle differential lock engaged on dry highway for a week. Which problem is most likely to appear?

- A. Driveline windup and tire scrubbing in turns
- B. Lower brake chamber pressure at all four corners
- C. A cooler operating temperature for the engine
- D. A higher clutch life across the service interval

117. A steering gearbox has its sector shaft preload adjusted at the end of its travel instead of at centre. What problem results?

- A. No change in the steering feel at all
- B. Binding or damage, since clearance differs at the ends
- C. Lower fuel consumption on highway runs
- D. Higher alternator output at idle speed

118. After a coolant service on a battery-electric truck's battery thermal loop, the pack is overheating at low load. What is the most likely reason?

- A. The tires are too cold on the rear axle during the winter months
- B. The wiper arm is bent on the windshield
- C. Air trapped in the loop that was not bled after refilling
- D. The brake pedal bushing is worn in the cab

119. A leak-down test on a worn engine shows air escaping loudly from the oil filler opening with the piston at top dead centre. Which component is leaking?

- A. Intake valve
- B. Exhaust valve
- C. Head gasket
- D. Piston rings

120. A technician replaces an engine module and avoids touching the connector pins with bare fingers. What is the reason for the precaution?

- A. Skin oil lowers the system voltage
- B. Static discharge can damage sensitive electronic components
- C. It prevents the connector from corroding at once
- D. It speeds up the reflash process

121. A hydraulic cab-tilt pump moves slowly, and the reservoir is low with air bubbles seen in the hose. What is the best action?

- A. Tilt the cab without using the safety prop
- B. Use brake fluid as a substitute in the pump
- C. Replace the cab latch and leave the circuit
- D. Top up with the specified fluid, fix leaks, and bleed air

122. A technician wants to measure pushrod stroke accurately on a straight truck. Which method gives a true reading?

- A. Measure with the parking brakes applied and the engine off
- B. Measure with the whole system at zero pressure
- C. Chock wheels, release parking brakes, apply fully at normal pressure
- D. Measure only after a long drive without stopping

123. A hydraulic driveline retarder produces much less braking late in a long grade, and its coolant temperature is very high. Which explanation fits?

- A. Heat build-up reduces retarder capacity until it cools
- B. The tires are overinflated on the drive axle
- C. The air dryer is full and needs service
- D. The alternator is overcharging the batteries

124. A tire has a localised bulge on its sidewall. The tread depth is still good. What should the technician do?

- A. Reduce the pressure and continue using the tire for now
- B. Remove the tire from service; the casing is damaged
- C. Cover the bulge with tape and keep driving for the trip
- D. Rotate the tire to a rear dual position for later

125. A truck has a rough idle and a slight loss of power. Fuel pressure is normal, and the scan tool shows high turbo outlet temperature with poor boost. Which fault is most consistent?

- A. A leaking charge-air hose or cooler connection
- B. A shorted tail lamp circuit in the rear harness
- C. A worn steering gear box on the front axle
- D. A leaking brake chamber diaphragm on the rear axle

126. A technician needs to recharge an A/C system after a repair. Which method gives the most reliable charge amount?

- A. Charge until the pressure looks high enough
- B. Charge until the compressor becomes noisy
- C. Charge by feeling the temperature of the lines
- D. Charge by weight to the specified amount

127. A technician measures 5 V at the supply pin of a sensor but only 2 V at its signal pin with the sensor connected and the engine running. The reading should be near 0.5 V at this condition. Which fault is most likely?

- A. A worn engine bearing in the rotating assembly after years of use
- B. A restricted fuel filter on the supply side
- C. A fault in the sensor or signal circuit raising the voltage
- D. A tired wiper motor on the windshield frame

128. An apprentice skips lockout on a coach's roof-mounted blower because the isolator is 'only a quick job to reach'. As the journeyperson, what is the best response?

- A. Stop the job, explain the hazard, and have the apprentice lock out
- B. Let it pass and raise it at the end of the shift
- C. Take over the job without explaining anything to them
- D. Report the apprentice at once without any discussion

129. A trailer air suspension leans to one side with a firm bump at the stop, and a leveling valve is working correctly. An air spring on that side is found deflated. What is the correct step?

- A. Add a block of wood under the spring seat for a quick fix
- B. Replace the damaged air spring and check the lines for leaks
- C. Adjust the brake chamber pushrod stroke
- D. Replace the kingpin on the trailer plate

130. A hoist cylinder on a work truck slowly lowers under load although the control valve is neutral. A pilot-operated check valve is fitted. Which fault is most likely?

- A. A weak starter motor on the engine
- B. A worn alternator belt at the pulley
- C. A leaking or contaminated check valve seat
- D. A loose hubcap on the drive wheel

131. A brake pedal on a truck feels normal, but one steer brake builds heat and the lining is glazed. What is the best next step?

- A. Replace all four tires on the steer axle
- B. Raise the compressor governor cut-out pressure setting
- C. Replace the clutch disc and pressure plate
- D. Check for a sticking chamber, cam, or restricted line

132. A technician is about to top up the gear fluid in an electric drive unit with the conventional axle oil from the shop shelf. What is the correct action?

- A. Use any 80W-90 gear oil, since all are interchangeable
- B. Use engine oil because it is thinner and cleaner
- C. Skip the fluid and rely on packed wheel grease
- D. Use only the fluid approved for that drive unit

133. A tractor tracks slightly sideways with the rear axle out of square to the frame. What is this condition called, and what is the usual remedy?

- A. Excessive caster, corrected by changing the tire size
- B. Excessive camber, corrected by adding more air
- C. An incorrect thrust angle, corrected by axle alignment
- D. A weak alternator, corrected by a new belt

134. An engine's coolant is lost steadily but no external leak is visible. Combustion gas is detected in the coolant overflow bottle. What is the most likely cause?

- A. A thermostat stuck in the open position
- B. A cracked head or failed head gasket
- C. A weak viscous fan clutch on the radiator

D. A loose hose clamp at the radiator inlet

135. A bench no-load test of a heavy-duty starter shows 650 amperes against a specified maximum of 200 amperes, and the armature turns slowly. What is the most likely fault?

A. Shorted windings or a binding armature inside the starter

B. A weak fuel lift pump on the engine block

C. A loose cab mount at the rear frame bracket

D. A restricted air filter in the intake housing

Practice Exam 22: Answer Key and Explanations

1. A — Many modules stay awake for several minutes after key-off, so an immediate reading includes normal operating current. The technician waits for sleep mode, then reads the true draw. Condemning the alternator or starting the engine gives no information, and reconnecting the ground may wake modules again. Patience gives the true figure. Recheck after ten minutes.

2. C — Oil in the intake after the filter points to a turbocharger centre section leaking oil, while blow-by pressure shows the crankcase is being overloaded. An oil thermostat only affects temperature, a fuel lift pump supplies diesel and not oil, and a cabin filter is unrelated to the engine air path. Inspect the compressor wheel for oil too.

3. B — Foamy fluid and cold-start whine show air in the circuit, typically from low fluid or a leaking suction line that lets the pump draw air. Brake linings, alternators and clutches do not aerate steering fluid. Top up, bleed, and repair the hose. Cold fluid draws air through a loose clamp easily, and bleeding the circuit afterward removes remaining bubbles.

4. C — The governor controls compressor loading and unloading, so a cut-in far below specification points to the governor itself being out of adjustment or failing. A leaking glad hand, cracked drum or worn kingpin do not alter where the governor switches the compressor on and off. Test it with a calibrated gauge. A faulty unit is replaced.

5. B — Oil on the clutch facing makes it grab unevenly, so judder will return unless the oil source is stopped and the contaminated disc replaced. Free-play adjustment, a modifier in the transmission or only a bearing do not remove oil from the friction surfaces. The oil source must be fixed first. Cleaning the surface does not remove absorbed oil.

6. D — A micrometer reads accurately only inside its own 25 mm span, so a journal near 38 mm needs the 25 to 50 mm frame, checked against its standard first. The smaller frame cannot close on the part, a

rule cannot resolve 0.01 mm, and a dial indicator compares movement rather than measuring a diameter directly.

7. A — A cold diesel engine that cranks but will not fire often has gelled fuel or an inoperative glow plug or intake heater. These two checks are quick and common in severe cold. A door seal, kingpin lock and defrost timer have no part in starting the unit's engine. Cranking speed and battery condition are checked as well.

8. A — High particle counts cause sticking valves and wear, so the system is cleaned, filtered and the ingress point found. Thicker fluid, higher pressure and blocked filters make contamination worse. Particles score spools and wear pumps. Oil analysis and a particle count confirm the target cleanliness is restored after flushing and fitting new filter elements.

9. C — AGM batteries are sealed and tolerate only controlled charging voltage, typically around 14.4 to 14.8 volts. A constant 16 volts forces gassing the cells cannot replace, drying the mat and shortening life. It does not cause undercharging sulphation. Use a charger made for sealed batteries. Overcharging also vents gas the sealed case cannot replace.

10. B — Sodium and potassium are common coolant additive elements, so high readings with thinned oil point to coolant reaching the crankcase through a cooler, gasket or liner. Dust shows up as silicon, normal wear shows as iron or copper in small amounts, and overfilling does not add additive metals. A lab report confirms it quickly.

11. D — A high-voltage heater can be energized by the traction battery, so the shutdown procedure and a verified zero reading are required before any work on orange cabling. Fan speed, filters and washer fluid do not make the circuit safe. Never assume a heater is off just because it is cold. Test with a meter.

12. C — Lost motion at the wheel rim before the road wheels move means looseness somewhere in the steering path, such as the gear, drag link, tie rods or column joints. Tread depth, a starter and a windshield do not add steering free play. Each joint is checked in turn. Free play beyond limits is unsafe.

13. D — Spring brakes release only when supply pressure reaches their release range, roughly 415 to 480 kPa. At 280 kPa the springs are still holding, so the technician should let the compressor build pressure, not cage or bypass the system. Draining tanks lowers pressure further. Never cage to move a loaded unit. Releasing needs adequate pressure.

14. A — With no free play the release bearing keeps light pressure on the levers, so clamp load drops and the disc slips, producing heat and glazing. Overfilled gear oil, a wet air dryer and tire pressure do not discolour a pressure plate. Free play must be set correctly. Heat discolouration confirms prolonged slipping.

15. B — A cab air spring supports its corner, so a leak lets the cab sag and contact stops, causing rattles. The spring or its fitting is repaired and height verified. Seat spacers, belts and the tilt cylinder do not restore the support. The cab corner then rides at the correct height. Replace worn bump stops too.

16. D — A slipping belt cannot turn the alternator at a steady speed, so output swings and the lamp flickers, especially when revved. Checking the belt wear and automatic tensioner is the logical step.

Washer motors, air dryers and fifth-wheel lubrication are unrelated. A worn tensioner is common. Replace a belt that is glazed or cracked.

17. C — Liner vibration creates tiny vapour bubbles that collapse against the metal. Coolant additives with nitrite form a protective film, and when concentration is low the film fails and pits develop. Correct glycol mix, a bypass setting and a clean core do not cause this specific cavitation damage. Test strips show nitrite level in minutes.

18. A — Insulating gloves can fail from tiny punctures, so they are inflated and inspected before use, with the test date confirmed, and leather protectors guard against cuts. Wet gloves, cut gloves or skipping the check remove the protection. Never rely on appearance. Small punctures are invisible but dangerous, so inflation and a visual check come before every use.

19. B — With the road wheels pointing straight ahead and the gear on centre, the drag link length decides where the steering wheel sits. Adjusting it moves the wheel spokes without disturbing toe. Changing toe on one tire upsets tracking, tire pressure does not move the wheel position, and maximum sector preload only makes the steering bind.

20. C — Clip-type sensors are pushed in until they touch the tone ring, and normal wheel-bearing movement then sets the gap as the ring pushes the sensor back. A shim, a wrench-tightened sensor or a loose bracket gives either too large a gap, a damaged sensor or unstable readings. Follow the maker's installation instructions closely.

21. B — Yellow-bronze particles in gear oil indicate soft copper alloy parts, such as synchronizer rings or bushings, are wearing. The magnet normally collects steel, so brass appearing is a clue to a wearing component inside the box. Engine pistons are not in the transmission, brake drums are iron, and clutch facings stay outside the oil.

22. D — Network-controlled alternators regulate to a setpoint the module sends. A low output with a sound alternator may mean the command, signal or wiring is wrong, so the technician checks that command and its circuit. A starter, tire pressure and cab filter do not control charging voltage. Scan tool data shows the command.

23. A — A rising level with foamy, light oil suggests a foreign fluid is entering the sump. Running the engine can spread damage through bearings, so the source must be confirmed first by pressure testing and checking cooler and injector seals. Fresh oil, dipstick calibration and warmth do not raise the level or create foam.

24. A — An impact can shift the internal spring and pawl, so the click may sound at the wrong value with no visible sign. Only a check on a calibration tester proves accuracy. Winding to maximum does not restore calibration, trusting the click is the original risk, and guessing an allowance cannot correct an unknown error.

25. C — Flash codes identify the circuit or sensor at fault, so the code is read and that circuit tested before any parts are replaced. Replacing drums, disabling ABS or changing tire pressure does not

address the fault. The code names the circuit to test. Flash patterns are listed in the maker's service literature.

26. B — A restricted suction line starves the pump so vapour bubbles form and collapse, causing whine and foam. Cleaning the strainer restores flow. The cab heater, brake lining and tire balance have no bearing on pump suction. Clean the strainer and check the hose for collapse or air leaks. Foam then clears quickly.

27. D — A leaking shock cannot damp tire bounce, so the tire hops and wears unevenly into cups. Replacing the shock and addressing balance prevents repeat wear. Engine power, lamps and coolant level have no influence on tire contact. Replace shocks in pairs. Balance the tires afterward, because shocks alone will not cure existing cupping.

28. D — The solenoid needs near-battery voltage at its small terminal to pull in, and 5 volts shows a large drop in the control circuit through a relay, switch or connection. The large terminal being at 12.4 V shows the supply is fine. Transmission shafts, diodes and injectors do not cause this. Voltage drop testing finds the loose connection.

29. C — At low speed the signal is weak, so a damaged tone-ring tooth or heavy contamination can produce missing pulses that the module reads as a fault. At higher speed pulses are stronger and the fault clears. Lighting, cab locks and coolant bottles cannot affect sensor signals. Weak low-speed pulses expose the damage.

30. A — The range cylinder is moved by air, so a leak or low supply pressure can prevent a complete shift, and the audible leak points to the circuit. Clutch lining, axle ratio and wheel nuts do not affect the range cylinder's operation. A soap test finds air leaks. Fix leaks before adjusting anything.

31. B — A position error means the module commanded one vane position and the feedback showed another. An actuator command test shows whether the actuator, linkage or vanes are binding, which separates a sticky mechanism from a wiring or software fault. Replacing the turbo first or clearing codes only guesses. That separates mechanical binding from wiring problems.

32. C — At highway speed ram air pushes enough air through the condenser to reject heat, but at idle the condenser fan must do that work. If it fails or turns slowly, head pressure climbs and cooling drops. The heater core, washer fluid level and a wheel bearing have no influence on how well the condenser sheds heat.

33. B — Twisted pairs cancel electrical noise picked up along their length, so a long untwisted section can make the data signal vulnerable to interference and cause intermittent errors. The condition does not change battery voltage, alternator output or fuel pressure. Repairs must keep the original twist. Heat-shrink seals keep each repair neat and sealed.

34. D — A shimmy that stays after balancing often comes from loose wheel bearings, worn steering parts or a damaged tire, so these are checked next. Fuel level, A/C oil and the air dryer cannot cause a speed-related steering shimmy. Lift the axle to check play. Rock the wheel top and bottom to feel bearing play.

35. A — An EGR cooler separates hot exhaust from coolant, and when it cracks, coolant is drawn into the intake and burns as white vapour while the coolant level drops. A turbo drain gives blue oil smoke, a worn nozzle gives black smoke, and a blocked breather raises crankcase pressure. Pressure testing the cooler confirms it.

36. B — The spring-brake and service sections are separated by an adapter, and a torn parking-section diaphragm allows supply air to leak into the service side and out its port. The spring-brake chamber must then be replaced. Cam bushings and clevis pins do not leak air. The entire chamber must be replaced. Verify by testing.

37. D — Lubricants from different makers can contain additives that do not work together, which can foam or reduce protection and affect seals. Using only the approved product avoids this. Quicker shifting, an automatic level drop and reduced clutch wear are not outcomes of mixing. Always check the approval first. Foaming and seal swelling are possible.

38. C — A working relay coil typically reads tens of ohms across its coil terminals. An infinite reading shows a break in the winding, so the relay cannot energize. A shorted coil would read very low resistance, and welded contacts are checked across the switch terminals. Coil continuity should be tested first. Replace the relay.

39. A — A door that latches can still leave gaps if its seal is worn or the striker is misaligned, so these are checked with a paper pull or light test. Compression, alternator output and range selection have no connection to water or wind leaks. A paper strip should drag slightly. Replace the seal if worn.

40. A — Frame flanges carry bending stress, so holes there start cracks. Drilling the web at the manufacturer's recommended spacing keeps stresses acceptable. A hole in a flange or near an edge or bend weakens the rail. Spacing rules keep holes from overlapping stress zones, and never welding or cutting near flanges preserves the heat-treated rail strength.

41. B — Regeneration burns soot but ash from oil additives is not combustible, so it builds until the filter must be cleaned off the truck or replaced. More regeneration cannot remove ash, removing the sensor hides the problem, and exhaust fluid belongs to the selective catalytic reduction system, not the filter. Ash is not combustible.

42. D — The ring test works because a sound vitrified or resin wheel rings clearly when tapped, while a crack deadens the note. A dull thud means the wheel may fail at speed and must be discarded before mounting. Hardness grade, flange size and bond type do not change this basic sound check. Never skip it.

43. C — Intermittent lamps with a wiggle-sensitive plug point to corroded or loose terminals, so cleaning and protecting the contacts restores a steady connection. Higher-wattage lamps and tape do not fix poor contact, and removing the ground breaks the circuit. Corrosion causes wiggle-sensitive faults. Dielectric grease then keeps moisture out of the contacts for years.

44. D — Hose reinforcement is braided to withstand pressure along a straight length, and a twist loads the braid unevenly and shortens life. Hoses should be routed without twist and respect their bend radius.

Mark the hose lay line before tightening, so you can see any twist, and use the correct bend radius at fittings.

45. A — An automatic adjuster should hold stroke by itself, so repeated excess stroke means a worn cam, bushing or anchor, or a damaged adjuster. Manual resetting only hides the cause. Higher pressure and a new boot do not change travel needed to apply the shoes. Inspect the anchor bracket and clevis for wear.

46. B — In a stall test the converter holds the turbine still while the engine pushes against it. A low speed means the engine cannot produce enough power, while slipping clutch packs would allow a high stall speed. Axle seals and kingpins do not affect it. Check engine output with a dynamometer or diagnostic data.

47. C — A fuse protects the wire, so a larger fuse can let the wire overheat before it opens. The repeated failure is a symptom of a short or overload that must be found and repaired. Bypassing or removing protection invites a fire. Upsizing risks wiring overheating. Use a test light across the fuse to find a short.

48. A — Crystallized reductant at the nozzle restricts spray, so less fluid reaches the catalyst and NOx slips through. The downstream sensor then reads high even with normal pump pressure. A starter relay, fuel aeration and a thermostat do not change dosing quantity. Cleaning or replacing the nozzle restores dosing. A lab-grade DEF sample also confirms quality.

49. D — An evaporator freezes when too little warm air crosses it, so a plugged filter or weak blower is a common cause. The thermostat, kingpin and steering gear do not affect airflow across the coil. Replace a plugged filter, confirm blower operation, and check that the evaporator thaws and drains correctly before returning it.

50. B — A levelling valve uses its linkage to sense height, so a bent arm gives a false signal. The linkage is repaired and ride height reset to the stated dimension. Added air, new shocks or a governor change do not correct the height sensing. Height is then checked against the specification. Test drive afterward.

51. C — Charging is allowed only after the vehicle and station confirm a safe connection through signal pins, so damaged or dirty pins or a faulty pilot circuit can block it. Brake chambers, engine cooling and a clutch are unrelated to charge-port communication. Charging begins only after both sides confirm a safe connection. Check the charger too.

52. C — Quick-release valves dump chamber air near the wheel for fast release, and restricted exhaust ports slow release at that end. Washer fluid, axle bearings and lamps are unrelated to the speed at which air leaves a brake chamber. Clean or replace the valve. Remove debris from the exhaust port and check the spring.

53. D — Automated manual transmissions have no clutch pedal, so the control module must learn the new clutch's engagement point through a calibration routine. Without it, engagement is rough. Pedal free

play and power steering bleeding do not apply, and heavier oil does not solve the problem. Skipping calibration leaves harsh engagement and stored fault codes.

54. B — Voltage drop equals current times resistance, so 30 amperes times 0.02 ohm gives 0.6 volts. That is a significant loss for a 12 volt circuit and points to a poor connection or undersized wire. The other values come from dividing or scaling the numbers incorrectly. Check the wire gauge too. Recheck after cleaning.

55. A — Diesel in oil lowers viscosity and flash point, and the smell is a strong clue. Long idling and injector leakage both push fuel past rings into the sump. Additive depletion does not smell of fuel, a dipstick seal affects air entry only, and age normally thickens oil rather than thinning it. Send an oil sample.

56. D — U-bolts settle as the spring pack seats, which reduces clamp load. Retorquing after a loaded run restores it and protects against axle shift. Loosening the bolts or adding shims creates movement, and the wheels are unrelated. Spring packs settle under load. Check torque again after a few hundred kilometres of loaded service.

57. A — Sealed connector terminals are held by small locking tangs that a matching removal tool depresses without damaging the seal or housing. Prying with a screwdriver, pulling the wire or heating the housing damages the connector and leads to repeat faults. Never force the pin. Reseat the pin until the lock tang clicks into place.

58. C — A 16-section safety data sheet places first-aid measures in Section 4 and accidental release steps in Section 6. Physical properties, disposal and regulatory sections are useful but do not tell a worker what to do after a splash. The missing supplier label also means the product must be identified and relabelled before use.

59. B — Uneven wear and off-track following a curb hit suggests an axle is out of square, so measurements against the kingpin and frame show how far the axles are out and allow the correction. Inflation, bearings and lamps do not address alignment. Tracking measurements show how far the axle has shifted. Then retest tracking.

60. D — Torque on a fitting transfers through the assembly, so a backing wrench holds the other end stationary and avoids twisting the hose or loosening the neighbouring joint. It does not change length, temperature or flow. Torque travels through the whole assembly. Without a backing wrench the hose can be twisted and fail early.

61. A — The trailer relay valve exhausts air from trailer chambers when the service line drops pressure. If its piston or exhaust is sticking, the chambers hold air and the brakes drag even though tractor pressure is normal. Fuel level, a fifth-wheel plate and a mirror have no effect on release. Overhaul or replace the valve.

62. B — Many automated transmissions use air-driven actuators for gear selection, and the controller blocks shifts if pressure is insufficient. There is no clutch pedal to wear, and engine oil level or a cab

latch does not govern actuation. Restore supply pressure first. Check air supply, filters, and leaks at the actuator lines too.

63. C — A cloudy layer at the bottom of the bowl shows free water, which freezes and blocks flow in winter. Draining the separator and testing for water and wax is cheap and decisive. Replacing a pump or removing the filter would expose the system to contamination and does not address the cause. Treat the fuel.

64. B — A walking-beam suspension pivots on a centre bushing, and wear lets the axles move out of position, creaking and wearing tires unevenly. Wiper arms, cab filters and coolant hoses do not cause suspension noise. Inspect bushings at every service interval. Replace the bushings as a set and check the axle alignment afterward.

65. D — With the sensor unplugged the reference should read about 5 volts. Measuring at the module end separates a wiring open or short between module and sensor from a module fault. Replacing the sensor, thermostat or coolant before testing is guesswork. Wiring faults are found this way. Compare the reading with the wiring diagram.

66. C — Valve stem seals harden with age, so oil seeps down the guides into the cylinders while the engine sits overnight and burns off as blue smoke at the next start. The smoke clears once that oil is consumed. Injector O-rings leak fuel, a failed cooler or cracked jacket loses coolant, and those faults give different smoke and symptoms.

67. A — Oil in tanks with a saturated dryer shows oil is leaving the compressor, through worn rings or a restricted inlet. Replacing the dryer alone would foul the new cartridge. A leaking protection valve, a lubricated adjuster and a dry pedal bushing do not put oil into the tanks. Replace the dryer cartridge afterward.

68. B — Free play in a universal joint shows as a clunk when torque changes direction and as vibration from the unbalanced rotation. Worn crosses and cups are the typical cause. Tire pressure, thermostats and fuel lines do not create driveline cross play. Replace the joint and recheck balance. Check the yoke ears too.

69. A — An actuator that clicks is receiving power and moving, so the problem lies in what it is meant to move. A disconnected or broken linkage rod inside the door leaves the lock unmoved. A weak fob battery would give no click, and a trailer lamp fuse or clutch pedal bushing is unrelated.

70. C — On many blower circuits the high speed bypasses the resistor pack, so if the resistor or speed module fails only high works. Drive axles, brake chambers and radiator caps do not control blower speeds. Check the resistor pack for burned terminals and overheating, because a failed module often follows a blocked airflow path.

71. D — A negative-temperature-coefficient thermistor loses resistance as it gets hotter, so a cold engine gives a high resistance and a warm engine a low one. The module reads the changing voltage across it to calculate temperature. A constant or zero reading would indicate a fault. The module reads the changing voltage. Resistance falls smoothly.

72. D — A slider that is not fully locked can let the fifth wheel move under braking or acceleration, so towing must wait until the lock is repaired and shows engaged. Slow towing, chains or lubricating the kingpin do not secure the slider. A slider moves under braking if unlocked. Retest the indicator afterward.

73. A — Lash lets the valve seat fully when hot as parts expand. If lash is too tight, the valve may be held slightly off its seat, losing the cooling path through the seat and burning the face. Noise is the sign of too much lash, and neither efficiency nor oil temperature improves. Recheck lash hot.

74. C — A soft bulge means the hose reinforcement has weakened or the inner tube has separated, which can flap shut like a valve and slow brake release. The hose cannot be trusted, so it is replaced. A clamp, tape or shortening the hose does not restore the damaged inner lining or its strength.

75. B — A failed centre support lets the shaft run off-axis, causing vibration, so it is replaced and the alignment checked. Random weights, an oil change and cab mount tightening do not remedy a sagging shaft. Balance is verified afterward. Check the rubber isolator and the bracket for cracks, then inspect both universal joints.

76. A — A hook latch keeps the sling or chain from slipping off, so a hoist without one is a defective device regardless of how light or low the load is. Wire is not an approved substitute. The hoist must be tagged out and repaired or replaced before any lift is attempted. Tag it clearly.

77. D — A dirty condenser cannot reject heat, so discharge pressure climbs and the cutout trips. Cleaning it restores heat transfer. Adding refrigerant would increase pressure further, and bypassing the switch removes protection. Dirt blocks airflow through the fins, so pressure climbs, and washing the coil with the unit shut down and checking the fan restores normal operation.

78. B — A relief valve opens only when pressure reaches its set point, so the actuator is held at its end of travel and the pump pushes flow over the valve. With free movement the pressure stays low, and a disconnected pump or empty reservoir gives no test. Only then does pressure reach the set point.

79. C — A Hall-effect sensor is a switched device, so it produces a digital square wave whose amplitude stays constant while frequency rises with speed. An alternating wave with growing amplitude is typical of magnetic pickups, and a flat line indicates no signal. Compare it against a known good pattern. Check the sensor air gap.

80. D — The plate needs lubrication to reduce friction and wear, and kingpin and jaw dimensions are measured against limits. A dry plate wears quickly. Brake chambers and tires are not involved in the coupling's lubrication. Measure wear against limits. Check kingpin diameter and jaw wear with go and no-go gauges against limits.

81. A — Compression-release brakes use engine oil pressure to move the slave pistons, so low oil pressure or level can stop the brake even though the switch and solenoid signals are fine. Cab heater valves, tire pressure and washer pumps are unrelated to the brake's operating pressure. Lost oil pressure disables the slave pistons.

82. C — Duty cycle is the portion of time the signal is on, so at 50 percent the average of a 12 volt signal is about 6 volts. A meter averages the pulses, so it does not show the full 12 volts. A reading above supply or at zero would not match the described signal.

83. B — Gauges at the chamber ports show how much air each brake actually receives at a given application, which reveals restricted lines, faulty relay valves or wrong proportioning. Lining thickness, bearing preload and oil carryover need separate inspections and cannot be measured by chamber gauges. It does not measure lining or bearing condition.

84. D — Slip yokes must move freely as the suspension travels, so splines need regular greasing at the fitting. Dry splines bind and wear and then clunk. Tape, extra oil changes and a thicker clutch do not lubricate the splines. Use the right lubricant. Grease until fresh lubricant just appears at the seal.

85. C — In hybrid and electric vehicles the 12 V battery powers the modules that close the high-voltage contactors, so a weak one prevents the ready state. The traction battery is not jump-started from another vehicle. Oil level and filters are unrelated. The traction pack is never jump-started. Charge the 12 V battery first.

86. B — Bubbles at the base of the stem show the leak is at the valve, so the stem or valve core is replaced and the leak test repeated. Sealant is not a lasting repair for a faulty valve, a higher pressure only hides the loss, and moving the tire to another position does nothing about the leaking valve.

87. A — A thermostat stuck open lets coolant circulate through the radiator from the start, so the engine warms slowly and runs cool and the heater gets less heat. Overheating suggests a stuck-closed thermostat, and oil pressure is not a direct indicator of thermostat position. Check against a thermometer reading. Then replace the thermostat.

88. B — Hot coolant should flow through the core and lose heat to the air, so a hot inlet with a much cooler outlet shows reduced flow or blockage while heat is being lost. Equal temperatures suggest normal flow, and cold hoses suggest no flow. A flush may restore flow. Check the heater valve.

89. D — Dim lamps that work on a bench supply suggest a poor power or ground connection in the connector or cable. A voltage-drop test across the ground path shows where resistance is. Oil pressure, coolant strength and tire tread are unrelated. It locates the resistance. Move the meter leads along the path until the high reading ends.

90. C — A dash supply valve stays in only when supply pressure holds it there. If the circuit leaks or the protection valve will not seal, pressure drops below the holding value and the valve pops out. Steering fluid, plates and clutch bearings are unrelated. Find and repair the leak. Check the hose fittings.

91. A — Gear noise that changes between drive and coast points to the tooth contact on one side of the mesh, often tied to pattern or bearing preload. The axle should be inspected. An alternator, steering gear and cabin filter are not sources of noise that varies with torque direction. Tooth contact pattern can then be read.

92. B — Much of applied torque is consumed overcoming thread and head friction. A lubricant lowers that friction, so the same wrench reading puts more clamping load and stretch into the bolt than the dry

specification intended. Torque is not independent of friction, and the lubricant does not make the bolt looser. Follow the stated finish.

93. D — The seal holds pressure at the coupling, so a cracked seal is replaced and the mating surfaces checked. Forcing the coupling, tightening a tank drain or taping the leak does not give a reliable seal. Clean, undamaged surfaces are needed. Fit a new rubber grommet, then soap test the coupling joint for leaks.

94. A — Milky hydraulic oil is a typical sign of water mixing in, which can enter through a damaged breather, seals or a cooler leak. High pressure, bearings and tire pressure do not cloud oil. Water destroys the lubricating film. Drain, flush, change the filters, and replace the breather before refilling with clean fluid.

95. C — A viscous clutch should slip when cold and engage as air temperature rises. If it stays locked, the silicone fluid has degraded or the thermal valve is stuck, so it needs replacement. Battery state, fuel restriction and steering parts do not control fan clutch engagement. It can be tested with the engine off.

96. A — Hub-piloted and stud-piloted systems centre and clamp wheels differently, so mixing hardware can leave a wheel off-centre or under-clamped. The correct parts must be used. Extra torque or washers do not fix a mismatch. Hub-piloted wheels centre on the hub and use two-piece flange nuts, while stud-piloted wheels centre on the studs and use different nuts.

97. C — Seat belt webbing carries crash loads, and any cut or fray reduces its strength unpredictably, so the assembly must be replaced. Trimming, sewing or taping leaves a weak belt. Even a belt with a working retractor must be replaced as a whole assembly whenever the webbing shows cuts or fraying, because strength cannot be judged by eye.

98. B — A module that stays awake draws current continuously, so the cure is to fix its wiring or sleep behaviour so that the draw stops. A larger battery only delays the problem. A belt and a fuel filter have no connection to the drain. Chronic drain also shortens battery life. Check the module wiring.

99. D — A tractor's brakes are sized for a loaded combination, so alone it can lock wheels easily. A bobtail proportioning valve lowers rear brake pressure when no trailer pressure is detected. Tire monitoring, axle ratio and fuel tank capacity do not change brake pressure. Alone, the tractor has little weight on the drive axles.

100. B — A differential lock is moved by an air shift unit, and a leak at the cylinder or line leaves it without enough force to engage and trip the indicator switch. Brake lining, coolant level and a valve cap do not control the lock. A soap test locates it. Replace the worn seals too.

101. C — Cooling systems are pressurized so the coolant boils at a higher temperature. A cap with a lower rating vents earlier, which reduces system pressure and lets the coolant boil at a lower temperature, causing boil-over. The cap does not change thermostat opening or coolant concentration. Always fit the rated cap. Check the sealing gasket.

102. D — When every gauge acts up together, a common cause is likely, such as the cluster's power or ground connection or its data link. Checking these first is efficient. Brake lining, fan blades and washer

fluid cannot affect all gauges at once. A common cause explains many symptoms. Check the fuses and connectors first.

103. A — Hub oil is judged against the level mark or sight window, which is only valid with the vehicle level. On a slope the oil is lopsided, so the hub can be overfilled, which stresses the seal, or underfilled. The other results do not follow. Level the vehicle before checking. Wait for settling.

104. A — A restricted ventilation filter traps pressure in the crankcase, pushing oil past seals. Servicing the filter relieves pressure and blow-by confirms ring condition. Thicker oil does not remove pressure, replacing seals alone repeats the leaks, and over-tightening the filter damages its gasket. Only then do the seals stay dry. Check the breather hoses.

105. B — A vacuum hold test checks sealing, and a rising pressure means air is leaking in, so the system is not sealed and must not be charged. A successful hold would show readiness, and oil quantity or refrigerant temperature does not explain the rise. Rising pressure means air is entering. Find the leak first.

106. D — An ABS lamp that stays on without sensor codes often means the controller is not receiving proper ignition power or ground, or it cannot complete its start-up check. Coolant, belts and wipers are unrelated to the controller's supply. Fuses and connectors are checked too. Check the ignition feed at the ABS connector with a meter.

107. C — Oil on the lining reduces friction and cannot be removed reliably, so contaminated linings must be replaced along with the wheel seal, and the hub and bearing inspected. Wiping, adding oil or leaving the drum off leaves an unsafe brake. Oily linings cannot be cleaned, so both brakes on that axle are relined together.

108. A — Programming writes new data to module memory, and a voltage dip can interrupt the write and leave the module unusable. A stable supply prevents this. Engine load is not needed, and the maintainer does not speed communication or receive charge from the module. Always connect it first. Use a maintainer, not a charger.

109. B — Regenerative braking depends on the battery accepting charge, and cold or full packs accept less, so the system reduces regeneration and blends in friction braking. The friction brakes are still fitted, and tire pressure or alignment do not alter blending. Blending is automatic. Expect firm friction braking when the pack is full or cold.

110. C — Blue medium-strength threadlocker secures against vibration yet lets the fastener be removed with normal hand tools. Red high-strength product usually needs heat to release, and a retaining compound is made for cylindrical press fits. A coolant gasket sealant has no locking strength at all on a threaded bolt. Always match the grade to future service needs.

111. D — A rear impact guard prevents passenger vehicles from sliding under a trailer, so it must be restored to its required strength and position. It is not cosmetic. Painting or leaving loose bolts defeats its safety function. Loose bolts defeat it. Repairs follow the maker's specifications and the applicable safety regulations for guards.

112. C — Zero flow with a turning shaft may be due to a low reservoir, an air leak, a blocked suction or a sheared coupling, so these simple checks come before replacing the pump. Wheels, fuel and coolant are unrelated. Simple checks come before an expensive repair. Check for sheared keys and worn splines.

113. D — A mechanical gauge reads actual pressure without the sender or dash circuit, so it shows whether the low value is real. If the mechanical reading agrees, bearing clearances or the pump may be at fault. Changing a gasket, thinning the oil or resetting the battery proves nothing. The result shows whether the sender is wrong.

114. B — A fusible link protects the circuit by melting before the main wire does, so it is a smaller-gauge wire with heat-resistant insulation. A larger link or equal-size wire would not open in time, and a bolt would remove protection entirely. A proper splice is also required. Never substitute plain wire or bolts.

115. A — Carbon buildup narrows the discharge line, so the compressor works against high back-pressure, runs hotter and fills the system more slowly. Faster tank filling, brake pad wear and heater output do not result from a restricted discharge line. Clean or replace the line, and inspect the compressor head and cylinder for carbon.

116. A — The lock joins the drive axles so they turn together, and on dry pavement in turns they need different speeds, causing windup and tire scrub. It should be used only for low traction. Brake pressure, engine temperature and clutch life are not improved. Use the lock only for poor traction. Disengage it on pavement.

117. B — Steering gears are adjusted at centre, where most wear occurs, and clearance changes toward the ends. An adjustment made at the end of travel can leave the centre loose or the ends binding. Fuel use and alternator output are unaffected. Centre is where the gear wears most. Readjust at the centre position.

118. C — Thermal loops depend on continuous liquid flow past the pack, and an air pocket can stop circulation and heat the pack. The service procedure includes a bleed step. Tires, wipers and pedals do not affect pack cooling. Follow the maker's bleed procedure. Run the pump while topping up until all bubbles stop.

119. D — With the cylinder held at top dead centre, air entering the crankcase and escaping at the oil filler goes past the piston rings. Intake valve leakage is heard at the intake, exhaust valve leakage at the tailpipe, and a head gasket leak appears as bubbles in the radiator or air in an adjacent cylinder.

120. B — Electronic modules contain components that static electricity can damage, often without any visible sign. Handling modules by the case and avoiding pin contact reduces that risk. Skin contact does not change system voltage or speed up programming. The module should be handled by its case. Ground yourself before touching or unplugging any module.

121. D — Air and low fluid slow the pump and make tilt uncertain, so the correct fluid is added, any leak fixed and the circuit bled. The safety prop must always be used, and brake fluid is not suitable. Check the pump reservoir after cycling the cab, and top it up to the mark.

122. C — Stroke is the distance the pushrod moves during a full application, so the springs must be released, wheels chocked and system pressure normal. Measuring with springs applied or no pressure gives incorrect travel, and a long drive without stopping does not give a controlled reading. Record the stroke for every brake chamber.

123. A — Retarders convert motion into heat, and when their cooling circuit reaches its limit the control reduces capacity to protect the unit. This happens on long grades. Tires, air dryers and alternators do not govern retarder output. Check cooler flow and coolant level. Fan faults and low coolant reduce retarding capacity on grades.

124. B — A sidewall bulge means cords have broken and the casing may fail suddenly under pressure. The tire must be removed and replaced regardless of tread. Reduced pressure, tape or a new position does not repair the casing. Tread depth does not matter. Mark the tire and dispose of it so it cannot return.

125. A — Charge-air leaks let boost escape before the intake manifold, so boost is low, the turbo works harder and the outlet temperature rises. The engine loses power and may idle roughly. Lighting, steering and brake components cannot alter boost measured at the turbocharger. Pressure testing finds the leak. Inspect the clamps and the cooler tanks.

126. D — Pressure varies with temperature and load, so weight is the dependable measure and the label states the correct amount. Judging by pressure, sound or touch can overcharge or undercharge the system. Weight is independent of ambient temperature. Recover the old refrigerant first, weigh it, and then charge exactly the amount on the label.

127. C — With the supply good, a signal that is higher than expected points to a fault in the sensor or a short or resistance in the signal circuit. Bearings, fuel filters and wipers do not alter a sensor's signal voltage. Check the connector pins for corrosion. Use a wiring diagram to find the signal circuit.

128. A — A mentor is expected to correct unsafe work at once and teach the reason, so the apprentice learns the habit instead of the excuse. Waiting leaves the apprentice exposed, taking over teaches nothing, and an immediate report with no discussion skips the coaching a mentoring role requires. Teaching the reason builds lasting safe habits.

129. B — A deflated air spring cannot hold its corner, so the suspension leans and rides on its stop. Replacing it and checking the line for leaks restores support. Wooden blocks, brake chambers and kingpins do not fix a leaking spring. Wooden blocks are not a repair. Check the other springs for cracks too.

130. C — A pilot-operated check valve should hold the load with no flow, so lowering under load shows its seat is leaking or held open by debris. Starter, alternator or hubcap faults cannot let a cylinder sink. Debris on the seat lets oil creep back. Clean or replace the cartridge and the oil filter.

131. D — A single hot, glazed brake shows that particular wheel is dragging or receiving unusual pressure, so the chamber, cam, slack adjuster and air line at that wheel are inspected. Tires, governor

pressure and a clutch disc would not isolate or fix a single-brake problem. Fix the cause before replacing linings. Test drive afterward.

132. D — Electric drive units may need low-viscosity or insulating fluids to protect gears, bearings and sometimes electrical parts, so the maker's approval governs. Interchanging oils or using engine oil risks damage, and grease cannot replace a circulating lubricant. Fluid choice protects insulation and gears. Check the maker's fluid specification for each drive unit.

133. C — When the rear axle is not square to the frame centreline, the thrust angle points off to one side and the truck tracks crabbed. Axle position adjustment brings it square. Caster, camber and alternator belts do not describe or correct this. A thrust angle gauge shows the error. Correct it at the axle.

134. B — Combustion gas in the coolant shows that cylinder pressure is escaping into the cooling jacket, which points to a cracked head or failed gasket. A stuck thermostat, weak fan clutch or loose hose clamp could cause temperature or visible leaks but would not put combustion gas in the coolant. A combustion leak test confirms it.

135. A — A no-load starter should draw modest current and spin freely. Very high current with slow rotation means extra load, such as shorted windings, a rubbing armature or a failed bearing. Fuel pumps, cab mounts and air filters play no part in a bench test of the starter itself. Replace the starter motor.