

PRACTICE EXAM 11: 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 is asked to find a battery drain on a school bus that goes flat after sitting for a weekend. With the ignition off and the modules asleep, what is the best method to locate the circuit responsible?
 - A. Put an ammeter in series, then pull fuses one at a time until the current drops sharply
 - B. Measure battery voltage after each fuse is removed and look for a rise of 0.2 volts
 - C. Disconnect the alternator and see whether the battery still holds a full charge after sitting overnight
 - D. Replace the batteries with new ones and check again after the vehicle sits for another weekend

2. A school bus with a modern diesel makes short trips with long idle periods. The driver reports a lit DPF soot warning and frequent requests for parked regeneration. Which condition best explains the repeated requests?
 - A. The coolant temperature sensor is reading too high and is cutting off fuel to the injectors
 - B. The turbocharger boost pressure is too high, which loads the filter faster with ash
 - C. The diesel particulate filter has been installed backwards in the exhaust flow
 - D. Exhaust temperature stays too low during light-load operation, so passive regeneration cannot burn off soot

3. A school bus has excessive free play at the steering wheel with the engine running, and the technician must find the source. Which is the best first step?
 - A. Increase the front tire pressure by 100 kPa to tighten the steering response and reduce play

- B. Inspect the steering linkage joints, drag link, and gear mounting for looseness first
- C. Replace the power steering pump to remove the play from the steering column
- D. Add more fluid to the reservoir until the play in the wheel is removed

4. On a school bus with air brakes, the compressor keeps running and system pressure builds past the normal governor cut-out without the compressor unloading. Which component is most likely at fault?

- A. The air dryer purge valve, which holds back the pressure that the compressor makes
- B. The governor, which is not signalling the compressor unloader at the cut-out pressure
- C. The spring brake chambers, which leak and keep calling for more air from the tanks
- D. The slack adjusters, which are out of adjustment and increase the system volume

5. A coach manual transmission jumps out of gear whenever the driver lifts off the throttle on a long downgrade, and it always happens in the same gear. Which cause is most likely?

- A. Worn shift fork pads or worn gear engagement teeth that no longer hold that gear in mesh
- B. An air filter regulator that is supplying too little pressure to the range cylinder in that gear
- C. A driveshaft that is slightly out of balance and shaking the gears loose at low road speed
- D. A transmission oil level that is slightly low, which lets the gears slide apart under load

6. An apprentice is replacing the batteries on a school bus parked in the bay. The bus has a cranking motor, alternator, and body ground connected to the same battery bank. Which disconnection order is correct before removing the batteries?

- A. Either cable first, provided the ignition key has been removed from the switch
- B. Positive cable first, because it carries the heavy cranking current through the circuit
- C. Negative cable first, then positive, so a dropped wrench cannot arc to the body
- D. Both cables at once with an insulated bridge so the memory settings stay alive for the radio

7. A trailer's ABS warning lamp remains on and the technician finds no power on the dedicated ABS pin of the seven-way connector. What is the most appropriate step?

- A. Replace the trailer ABS valve first, since the lamp always indicates a valve fault in the trailer
- B. Install a larger fuse in the tractor to push more current to the trailer
- C. Bypass the connector and wire the ABS directly to a trailer marker lamp
- D. Trace the circuit back from the connector and repair the break, poor ground, or corroded pin on that line

8. The hydraulic reservoir on a refuse truck packer runs well above its normal temperature during a long shift, with the fluid level correct. Which condition best explains the excess heat?

- A. A reservoir breather that passes air too freely and keeps the fluid cooling down
- B. A return filter element that is new and passes too much fluid back to the tank
- C. A relief valve that opens continuously, which turns pump flow directly into heat
- D. A suction strainer that is new and allows unrestricted flow into the pump inlet

9. A fleet installs absorbent glass mat batteries in a transit coach and a technician needs to charge a discharged one in the shop. Which approach is correct?

- A. Use any charger, because the type of lead-acid battery has no effect on charging
- B. Use a high-rate fast charge until the case gets warm to the touch
- C. Add distilled water to each cell during charging to prevent the plates drying
- D. Use a charger set to the AGM profile with the specified voltage limits

10. An ambulance engine that idles for hours at a scene shows oil that is thin and smells of fuel at its scheduled change. Which cause is most likely for the oil dilution?

- A. A restricted crankcase breather forcing combustion gases to push fuel out through the dipstick tube
- B. Post-injection fuel from regeneration cycles washing past the rings into the crankcase
- C. Excess coolant leaking from a loose water pump seal into the sump oil
- D. An overfilled fuel tank allowing diesel to flow backward through the lift pump

11. A school bus air conditioning compressor clutch will not engage, and the system pressure gauges show almost no pressure. What is the most likely reason?

- A. The refrigerant charge is too low, so the low-pressure switch blocks the clutch
- B. The cabin air filter is too clean, which opens the low-pressure switch and stops the clutch
- C. The heater valve is open, which tells the switch to protect the compressor
- D. The compressor oil is too high, which tells the switch the system is overcharged

12. A technician finds foamy power steering fluid and a whining pump on a transit bus. Which cause is most consistent with these symptoms?

- A. A front tire that is under-inflated and restricting the flow of fluid through the steering gear linkage
- B. A steering gear that is turned past its stops and overheating the fluid
- C. Air entering the suction side, such as a low fluid level or a loose or damaged suction hose
- D. A drag link that is bent and causing the pump to cavitate

13. During an air leakage test on a fully charged school bus with the engine off and brakes released, the technician watches the gauge fall about 55 kPa in one minute. What is the correct conclusion?

- A. The loss is normal for a bus of this size because air systems always bleed at that rate
- B. The leakage is well above the allowable rate, so the system needs a leak inspection before it returns to service
- C. The compressor has failed to charge the tanks to the correct governor cut-out
- D. The only action needed is to drain the tanks and refill them to settle the gauge

14. A vocational truck with a manual transmission chatters when the clutch engages from a stop, and an oily film is found on the clutch disc faces. Which inspection should come next?

- A. Check the rear main and input shaft seals for leakage
- B. Check the radiator cap for pressure loss that is letting coolant into the clutch
- C. Check the alternator belt for slip that is generating heat inside the housing
- D. Check the fuel injectors for leakage that is dripping into the bell housing

15. A school bus driver complains of increased cab vibration and a thumping noise over bumps, and the technician finds the rear cab mount rubber torn and sagging. What is the correct repair?

- A. Remove the mounts and bolt the cab directly to the frame for a solid fit
- B. Add extra grease to the mounts so that the rubber moves freely again
- C. Tighten the mount bolts until the cab no longer moves relative to the frame
- D. Replace the damaged mounts and check the cab alignment and fasteners to the specified torque value afterwards

16. A technician must jump-start a school bus that has a dead battery using a second vehicle. Which final connection is safest to complete the circuit?

- A. The last negative clamp directly on the dead battery's negative terminal
- B. The last negative clamp on a clean engine ground away from the dead battery
- C. The last positive clamp on the donor vehicle's fender, which acts as a ground
- D. The last clamp on a fuel line bracket close to the dead battery

17. A fleet tests the coolant in a transit coach and finds the freeze protection satisfactory, but the supplemental additive level is low. The coolant is the extended-life type. What is the correct service?

- A. Drain the system and refill with plain distilled water for a fresh start
- B. Add a small amount of rust inhibitor from the parts shelf, whatever brand is available
- C. Add the supplemental coolant additive recommended by the engine maker for that particular extended-life coolant type
- D. Add conventional green antifreeze to boost the glycol concentration

18. A technician is preparing to service the high-voltage components of an electric transit bus. Which sequence best protects the technician?

- A. Wear rated gloves, remove and lock out the service disconnect, wait, and verify zero voltage with a meter
- B. Wear leather work gloves, since orange cable insulation protects against all shock

- C. Cut the orange cables with insulated cutters and measure voltage afterwards
- D. Turn the key off and begin work, since the key shuts off all the high voltage

19. Steering on a school bus feels heavy at low speed, and a pressure gauge in the pump line shows low relief pressure when the steering is held at full lock. What does this indicate?

- A. The steering gear is overheating because the tires have too much tread
- B. The fluid is too clean and is not providing enough resistance for the pump to work against
- C. The steering column universal joint needs a new retaining pin
- D. The pump is not producing enough pressure, likely from wear or a faulty relief valve

20. A transit coach has a spring brake that will not release, with full system air pressure available at the chamber. After checking the air line, the technician must move the coach for repair. What is the correct approach?

- A. Cage the spring brake with the caging tool, then repair the chamber after moving the coach to the bay
- B. Tap the chamber with a hammer until the spring brake finally lets go
- C. Remove the push rod and drive the coach with that wheel having no brake at all
- D. Open the chamber clamp ring and remove the power spring so the brake releases

21. A manual transmission on a coach is hard to put into gear at a stop with the clutch pedal fully depressed, and the pedal travel feels short. Which condition is most likely?

- A. A drive shaft that is slightly out of balance at low road speed
- B. Excessive free play, air in the hydraulic release system, or worn linkage
- C. A clutch pedal return spring that is too strong for the operator's leg
- D. A transmission oil level that is slightly above the fill plug opening

22. A school bus headlamp is dim, and the technician measures 0.9 volts between the lamp ground and the battery negative post with the lamp on. What does this indicate?

- A. A shorted headlamp filament that is drawing too little current from the circuit
- B. An alternator that is overcharging and pushing extra current through the lamp
- C. Excess resistance in the ground path, such as a corroded connection
- D. A fully charged battery that has too much voltage for the lamp circuit

23. A school bus engine runs well at highway speed but overheats at idle on a warm day, and the upper hose is hot. Coolant level and the thermostat check out. Which fault is most consistent?

- A. A cracked cylinder head that lets combustion gases into the cooling system only at idle
- B. A coolant temperature sensor that is reading higher than the real coolant temperature
- C. A radiator cap with the wrong pressure rating releasing coolant at highway speeds
- D. A fan clutch that is not engaging, so too little air moves through the radiator at idle

24. A technician fills a spray bottle with windshield washer concentrate from a 20 litre drum and sets it on the bench in the ambulance bay. Under WHMIS 2015, what is required for the spray bottle?

- A. A label showing only the product name, since the data sheet carries the hazard details
- B. A workplace label with the product name and safe handling information, plus the SDS
- C. No label, because a bottle used within a single shift is exempt from the labelling rules
- D. The original supplier label copied by hand, including every pictogram from the drum

25. The landing gear on a dry van trailer is hard to crank, and the gear box turns stiffly in both directions with the legs unloaded. What is the proper service?

- A. Pour engine oil down the legs until the gear turns more easily
- B. Use a long cheater bar on the handle to force the gear through its travel
- C. Weld the legs in the lowered position and leave them there permanently
- D. Inspect and lubricate the gear box and legs, checking for bent legs or damaged internal gears

26. A hydraulic cylinder on an ambulance cot lift slowly drifts down when the control valve is in neutral, and no external leakage is visible. Which fault is most likely?

- A. Internal leakage past the piston seal or a leaking holding valve
- B. A pump that is too large for the cylinder size, which causes the drift
- C. A hose that is too long, which stores pressure and slowly releases it
- D. A reservoir that is slightly too full, which pushes fluid past the piston

27. A bus pulls to the right on a level road with no brakes applied, and the right front caster measures less positive than the left. What does this indicate?

- A. Excess steering box lash, which makes the vehicle pull toward the lash direction
- B. Equal toe on both sides, which will not cause a vehicle to pull in either direction at speed
- C. Unequal caster, which pulls the vehicle toward the side with less caster, so alignment is required
- D. A normal condition, because the right side always has less caster on a crowned road

28. A technician tests a standard four-terminal relay on an ambulance and finds about 85 ohms between terminals 85 and 86, and no continuity between terminals 30 and 87 with the coil de-energized. What does this suggest?

- A. The coil winding is open and the relay needs replacing before it will work
- B. The contacts are welded closed and the relay will stay energized all the time with power on
- C. The relay is normal at rest: the coil is intact and the contacts are open
- D. The relay is wired backward and will not operate on either polarity

29. A technician finds an automatic slack adjuster on a school bus that repeatedly measures out of adjustment, with push rod stroke over the limit at one wheel. What is the best course?

- A. Diagnose the cause, such as a worn or binding camshaft, bushing, or adjuster
- B. Replace all brake chambers on the vehicle, since stroke is controlled by the chamber alone
- C. Lengthen the push rod so that the stroke reading falls within the specification
- D. Adjust it manually every service interval and treat that as the normal procedure

30. A coach with a range-shift manual transmission grinds and will not shift between low and high range, and the truck has full system air pressure. Which item should be inspected first?

- A. The rear axle ratio, which determines whether range shifts are allowed at road speed
- B. The air supply to the range cylinder, its filter regulator, and lines
- C. The transmission countershaft bearings, which control the range selection directly through the gears
- D. The clutch disc springs, since range shifts depend on clutch engagement speed and feel

31. A technician performs a cylinder leakage test on an ambulance diesel and finds a cylinder with air escaping audibly from the exhaust. What does this indicate?

- A. A worn intake valve guide that is leaking oil into the intake manifold
- B. A cracked block that is allowing air into the coolant passages
- C. A worn piston ring set, which would show air escaping at the crankcase breather
- D. An exhaust valve that is not seating properly in that cylinder

32. A technician has repaired an A/C leak on a transit coach and is preparing to recharge the system. What must be done after the repair and before adding refrigerant?

- A. Evacuate the system with a vacuum pump for the specified time and confirm that it holds the vacuum
- B. Blow compressed shop air through the lines to dry them thoroughly
- C. Spray water into the lines to flush out any oil from the compressor
- D. Charge the system with refrigerant immediately to push the air out of the lines

33. A fuse feeding the rear marker lamps on a transit bus blows repeatedly even after being replaced with the correct rating. What is the proper next step?

- A. Remove all the marker lamps and leave the circuit open permanently
- B. Trace the circuit for a short to ground and repair it
- C. Install a higher-rated fuse so that it stops blowing under normal load on the circuit
- D. Replace the fuse with a piece of wire to complete the circuit

34. A technician sees feathered tread wear, with one edge of each rib sharp, across both front tires of a transit coach. Which alignment setting is the most likely cause?

- A. A worn kingpin, which always produces wear on one tire only
- B. A low tire pressure, which wears the centre of the tread more heavily
- C. An unbalanced wheel, which normally produces spot wear in the tread
- D. Incorrect toe, which drags the tires sideways as they roll

35. A technician is asked why a turbocharged transit-bus engine shows excessive oil consumption with a small amount of oil in the intake piping and charge air cooler. Which cause is most likely?

- A. A cracked oil cooler core letting engine oil mix with the coolant
- B. A restricted fuel filter forcing the injection pump to draw extra lubricant
- C. A failing turbocharger compressor-end seal, letting oil past into the charge air stream
- D. A worn rear main seal letting oil escape downward toward the flywheel housing

36. A school bus air dryer is found with wet, oily desiccant, and moisture is draining from the tanks. The dryer cartridge was changed six months ago. Which underlying cause should be investigated first?

- A. Low coolant level, which lets the compressor run at a lower temperature than normal
- B. A governor set too low, which causes the compressor to build pressure slowly
- C. Brake chambers with leaking diaphragms that are putting oil into the supply tanks
- D. Excessive oil carry-over from a worn compressor, which contaminates and saturates the desiccant cartridge quickly

37. A technician is checking the lubricant level in a manual transmission on a vocational truck that is parked on level ground. What is the correct procedure?

- A. Fill the transmission until lubricant overflows from the vent breather on top of the case
- B. Start the engine and run it at idle while checking through the drain plug
- C. Remove the fill plug and confirm the lubricant reaches the bottom of the opening before refitting it
- D. Pour in the lubricant until the dipstick on the shifter reads between two marks

38. A fleet replaces incandescent turn signal bulbs with LED lamps on a school bus, and the flasher now blinks at double the normal rate. What is the usual correction?

- A. Install a larger alternator to supply the extra current to the lamps
- B. Fit an electronic flasher or load resistor suited to the lower LED current draw of the lamps
- C. Add a second set of LED lamps to the circuit to balance the current
- D. Replace the battery with one of a higher cold cranking rating

39. A technician replaces a bonded windshield on a transit bus using urethane adhesive. When may the vehicle be returned to service?

- A. After the drive-away time given by the adhesive maker for the current temperature and humidity
- B. After twenty minutes in every case, because the time depends only on glass size
- C. As soon as the glass sits level, because the adhesive sets by pressure alone
- D. After the first day of rain, because water from the weather helps to cure the adhesive fully

40. A technician checks a school bus frame for damage after a collision by comparing diagonal measurements between fixed reference points. What do unequal diagonals show?

- A. The frame is perfect, because unequal diagonals are normal in all heavy vehicles
- B. The tires are of different sizes and need to be rotated to even the measurements
- C. The frame is out of square, so it needs repair to the maker's specification before returning to service
- D. The suspension is overloaded and the springs need a higher rating

41. A bus engine builds oil pressure normally when cold, but at hot idle the gauge reads very low while it recovers when revved. Oil level is correct. Which cause is most likely?

- A. A fuel injector that is sticking open and diluting the oil only at higher engine speeds under load
- B. Worn main and rod bearings with larger clearance, which pass too much hot, thin oil at idle pump speed
- C. An oil pickup tube that has been installed upside down in the sump
- D. A blocked oil cooler, which always causes low pressure during idle and high speed alike

42. A technician has isolated and locked out the hydraulic power unit that runs a wheelchair lift on a transit coach, and has applied a personal lock and tag. What must be done next before reaching into the lift mechanism?

- A. Release or block any stored energy, then try the controls to confirm the lift cannot move or fall
- B. Cycle the lift once under power to bleed the lines before placing hands inside it
- C. Hand the key to the supervisor so the tag shows who is responsible for the lock
- D. Start the engine briefly to confirm that the pump no longer produces pressure

43. After coupling, a tractor-trailer's trailer spring brakes will not release when the driver pushes in the trailer air supply valve, and the supply line pressure is low. Which fault is most likely?

- A. A worn trailer tire that is preventing the supply line from filling with air to the brake chambers
- B. A stuck trailer landing gear that is holding the spring brakes on
- C. A cracked trailer mud flap that is leaking air from the brake chambers
- D. A restriction or leak in the supply line or glad hand, or a faulty protection valve

44. A technician replaces a high-pressure hydraulic hose on a rescue truck. Which practice is correct?

- A. Twist the hose slightly during installation so that it stays in place
- B. Cut the hose a little short so that it stays tight and straight in the routing
- C. Use a hose with a lower pressure rating if the length matches the original
- D. Use a hose with the correct pressure rating and length, routed without twisting

45. A school bus ABS warning lamp stays on, and the scan tool reports a wheel speed sensor circuit fault at the right front. Resistance of the sensor is within specification. What should be inspected next?

- A. The slack adjuster stroke, which adds electrical resistance to the sensor circuit
- B. The sensor air gap and the tone ring for damage or debris, plus the connectors
- C. The brake chamber diaphragm, since it controls the wheel speed signal directly at the sensor

D. The compressor governor setting, because low pressure sets the ABS fault code

46. A manual transmission makes a whirring noise in neutral with the clutch engaged, and the noise stops when the clutch pedal is pressed. What does this suggest?

- A. A failed rear wheel bearing, which would be heard in neutral regardless of the clutch pedal position
- B. A worn output shaft bearing, which is heard only when the vehicle is rolling
- C. Wear in the input shaft or drive gear bearings, which turn only when the clutch is engaged in neutral
- D. A damaged flywheel, which makes noise only when the clutch pedal is released

47. The red stop-arm lamps on a school bus flash together instead of alternating, and the amber lamps work normally. Which item is the most likely cause?

- A. A fault in the flasher module or wiring that supplies the alternating red lamp output for the stop arms
- B. A faulty alternator diode that is pulsing both lamp circuits together while the engine runs
- C. A worn turn signal switch that has no connection to the red lamp circuit
- D. A weak battery that cannot supply both red and amber lamp circuits at once

48. An ambulance engine is hard to start at minus 25 degrees Celsius and runs rough with white smoke for the first minutes. The battery and starter are fine. What is the most likely cause of the white smoke and rough running?

- A. Unburned fuel from incomplete combustion in cold cylinders, such as a failed intake air heater in severe cold
- B. An overfilled air cleaner housing that is restricting incoming air at low temperature
- C. A leaking head gasket that has pushed engine oil into the exhaust manifold
- D. An exhaust valve stuck wide open, which would remain once the engine had warmed up

49. A school bus has no heat. The heater hose entering the core is hot, but the outlet hose is cool, and the engine is at operating temperature. Which fault does this indicate?

- A. A faulty blower motor, which always blocks the flow of coolant in the hoses
- B. A plugged heater core that blocks coolant flow, so the outlet stays cool
- C. An overcharged A/C system, which makes the heater core cold on the outlet side
- D. A faulty thermostat that is holding the coolant at a temperature that is too high

50. A technician needs to attach a bracket to the rail of an ambulance chassis. Which practice protects the frame's strength?

- A. Weld across the bottom flange to produce a rigid connection to the bracket
- B. Cut a notch in the rail near the axle so the bracket sits flush with the frame
- C. Use the existing holes or drill only in the web, and avoid the top and bottom flanges of the rail
- D. Drill several holes along the top flange to spread the bolt loads evenly

51. An electric bus operates in cold weather and its regenerative braking is noticeably weaker than normal, with the battery at a high state of charge. What is the best explanation?

- A. The air dryer is wet, which prevents the motor from acting as a generator
- B. The brake pads have frozen and are producing the extra friction for the regeneration
- C. The charge port cover is open and is preventing regenerative braking from working
- D. The control system limits regeneration when the battery is cold or nearly full of charge

52. A technician checks an S-cam brake chamber on a coach axle at half stroke and finds the push rod and slack adjuster arm are not at about 90 degrees. What does this affect?

- A. Braking force and wear, because the wrong angle lowers the torque for a given push rod stroke
- B. The compressor cut-out pressure, since the angle changes the system volume at the brake chamber
- C. The ABS sensor air gap, because the arm angle moves the tone ring
- D. The air dryer purge timing, which depends on the slack adjuster arm length

53. An Allison automatic transmission in a transit bus shows repeated high fluid temperature warnings during heavy stop-and-go service. Which is the most likely cause to investigate first?

- A. A worn engine fan belt, which has no effect on transmission cooling
- B. A restricted transmission cooler or lines, or low fluid level
- C. A cracked wheelchair lift hose that is leaking engine coolant into the sump
- D. A dirty cabin air filter, which controls the transmission fluid temperature

54. An ambulance has a house battery bank that is draining the starting battery overnight, even though a battery isolator is installed. Which fault is most likely?

- A. An undersized battery cable on the house bank that is acting as a resistor
- B. An overcharging alternator that pushes extra current backward into the starting battery
- C. A parasitic draw caused by the vehicle's headlight switch that is off
- D. A failed isolator, such as a shorted diode or stuck relay

55. A shop finds black smoke under load on a school bus, with low boost pressure and a hissing sound at the charge air cooler. Which repair addresses the likely cause?

- A. Replace the engine oil filter, because a restricted oil filter reduces turbo boost on the engine
- B. Replace the DEF dosing unit, since a poor dosing rate always produces black smoke
- C. Repair the leaking charge air cooler or boot clamp so the engine gets full boost air again
- D. Adjust the exhaust brake linkage so the valve opens fully at idle

56. An air-suspension school bus leans to the left, and the left leveling valve has a loose linkage that has slipped from its original setting. What is the correct repair?

- A. Reset the linkage to the specified ride height at normal air pressure, then retighten it
- B. Increase the right tire pressure until the bus levels itself
- C. Replace the left shock absorber, since it controls ride height directly
- D. Add a thicker spring seat on the left side to raise the body back to the correct level

57. An ambulance with two alternators shows a low system voltage at idle with all warning lights on, and one alternator produces no output. What is the most useful first step?

- A. Increase the engine idle speed permanently to compensate for the failed unit
- B. Disconnect the working alternator to see whether the failed unit starts again
- C. Check the failed alternator's output wiring, excitation signal, and belt drive before replacing it with a new unit
- D. Replace both batteries, since a battery is the usual cause of no alternator output

58. A body shop will weld a bracket onto the frame of an ambulance chassis that carries several electronic control modules. Which preparation protects the electronics and prevents current damaging bearings?

- A. Leave the batteries connected so the modules keep their memory, and clamp at the rear bumper
- B. Disconnect the batteries and alternator leads, then clamp the welder ground close to the weld on the frame rail
- C. Turn the ignition switch off and place the ground clamp on the engine block for stability
- D. Disconnect only the engine control module and weld with the ground clamped to a wheel stud

59. A refrigerated trailer unit shows high head pressure and poor cooling on a hot day, and the condenser coil is packed with road debris. What is the correct service?

- A. Close the discharge valve partway to reduce the load on the compressor
- B. Replace the evaporator coil because the condenser is part of that assembly
- C. Add more refrigerant until the head pressure rises to the normal value
- D. Clean the condenser coil and check fan operation

60. A sample of hydraulic fluid from a refuse truck looks milky. What does this indicate and what is the correct action?

- A. Water contamination, so replace the fluid and find the source
- B. Aeration from an overfilled reservoir, which clears itself with a longer warm-up at normal pressure
- C. Normal oxidation, so the fluid only needs a filter change at the next service
- D. Excess additive, which will settle out after the system warms up

61. A school bus drum shows heat checking and a measured inside diameter exceeding the discard dimension cast on the drum. What is the correct repair?

- A. Machine the drum again to remove the cracks and reinstall it with thicker linings
- B. Replace only the cracked drum and leave the other side as it is
- C. Reuse the drum after cooling, because heat checks are cosmetic on a cast iron drum
- D. Replace the drum and its mate on the same axle

62. A technician needs to check the fluid level on an automatic transmission in an ambulance that uses a dipstick. Which conditions give the most accurate reading?

- A. Fluid hot, vehicle parked on a slope, transmission in reverse, and the engine off
- B. Fluid at operating temperature, vehicle level, transmission in neutral, engine idling
- C. Fluid at any temperature, transmission in park, and the engine at a high idle
- D. Fluid stone cold, vehicle level, transmission in drive, and the engine switched off

63. A technician compares a diesel exhaust fluid sample from an emergency truck with the specification and finds the concentration well below 32.5 percent urea, with the tank otherwise clean. What is the proper action?

- A. Leave the fluid in place, because the control module will correct the dosing automatically over time
- B. Add a small amount of urea powder to bring the concentration back up
- C. Drain and flush the DEF system, then refill with fresh fluid that meets specification
- D. Top the tank off with water, since a lower concentration only reduces dosing

64. A coach settles on one side overnight, and the air gauge shows full pressure in the morning after a build. Soap solution shows bubbles at an air spring bellows. What is the correct action?

- A. Fill the bellows with sealant and leave the leaking air spring in service
- B. Increase the governor cut-out pressure to keep the coach level overnight
- C. Replace the leaking air spring and inspect its mounting
- D. Remove the leaking air spring and operate the coach on the stop bumper

65. A school bus will click but not crank, with the batteries at 12.6 volts. A voltage drop test across the starter solenoid's main contacts reads 2.1 volts during cranking. What does this show?

- A. A seized engine that has drawn the maximum possible current from the circuit
- B. High resistance within the solenoid contacts, wasting starter voltage
- C. A faulty ignition switch that is applying a double voltage to the solenoid
- D. A fully charged battery that is supplying too much current to the starter

66. A technician suspects an ambulance engine has combustion gas leaking into the coolant. Which test best confirms a leaking head gasket without disassembly?

- A. A chemical combustion-leak test of the coolant, or a pressure test showing bubbles
- B. Time the engine starting speed with a scan tool while the battery is at full charge
- C. Measure the oil viscosity with a viscometer and compare it to the oil grade
- D. Check the fuel rail pressure at idle for any variation from the specification

67. A leaking wheel seal has soaked the lining on one drum brake of a transit coach with grease. What is the correct repair?

- A. Wash the linings with solvent and reinstall them so the brake recovers friction
- B. Bake the linings in the sun until the grease evaporates and then refit them
- C. Replace only the wheel seal, because linings absorb grease only temporarily
- D. Replace the seal and the contaminated linings on both wheels

68. An Allison transmission will not shift out of second range, and the scan tool shows a code for an output speed sensor circuit. What is the most appropriate next step?

- A. Increase the fluid level above the full mark to improve the sensor signal strength
- B. Clear the code and drive the coach until the transmission shifts on its own

- C. Replace the transmission control module since it is always the cause of such speed sensor circuit codes
- D. Test the speed sensor circuit and connector, replacing the sensor only if it fails

69. A cab door on a rescue truck rattles at highway speed and produces wind noise, and the weatherstrip looks intact. Which service is most appropriate?

- A. Tighten the door hinge bolts beyond their torque value to hold the door in
- B. Check the striker position and weatherstrip compression, then adjust the striker
- C. Add thick grease to the weatherstrip to quiet the wind noise
- D. Replace the door glass, because noise always comes from the window

70. A coach driver reports air coming from the floor vents instead of the defroster no matter what the control is set to, and the control head moves normally. Which part is the most likely cause?

- A. A leaking heater core that sends air to the floor by design when the control is moved
- B. A blown fuse in the headlamp circuit that controls the vent direction
- C. A failed mode or blend door actuator or a stripped linkage in the housing
- D. A worn compressor belt that directs the airflow to the lower vents

71. A school bus cranks slowly in cold weather, with the batteries tested good and the cables measuring a small voltage drop. The starter draws well above the specified current. What is the most probable cause?

- A. Excess drag in the starter or engine, such as worn bushings or thick oil
- B. An alternator that is overcharging and loading the engine while it cranks the starter
- C. A DPF filter restriction that increases the engine's cranking resistance
- D. A cranking relay that is feeding too little current to the starter

72. A leaf-spring axle on a vocational truck has shifted rearward on the right side, and the technician finds a broken spring center bolt. What is the correct repair?

- A. Replace the shock absorber so it takes the load that the bolt used to carry
- B. Weld the axle to the spring seat so that it cannot shift again
- C. Grind off the broken bolt head and drive the truck with the axle as it sits
- D. Replace the spring assembly or center bolt, then align the axle

73. A transit coach engine retarder produces weak braking, and the technician finds the brake housing lash was last set incorrectly. What should the technician do to correct the retarder?

- A. Increase the engine oil pressure until the retarder housings fire more strongly
- B. Replace the coolant thermostat to increase heat available for engine braking at idle
- C. Adjust the retarder lash to the maker's specification, in the stated sequence
- D. Set the lash by feel while the engine is running at governed speed

74. A school bus pulls to the right during moderate braking, and the right front brakes show a longer push rod stroke than the left side. Which is the best interpretation?

- A. The ABS system is applying the right brake automatically before the driver brakes
- B. The right brake applies late or weakly, so its foundation brake needs correction
- C. The compressor is delivering more air pressure to the right circuit only
- D. The right brake is applying too strongly, so the left side should be adjusted to match

75. A technician drains the transmission of an ambulance and finds dark fluid with a burnt smell and fine metallic particles on the magnet. What is the proper conclusion?

- A. Internal clutch wear has probably occurred, so the transmission needs inspection, not just a fluid change
- B. The burnt smell is from the engine oil and has no relation to the transmission
- C. The fluid is only dirty and a regular fluid change will fix the problem fully for good
- D. The particles are normal break-in debris in any transmission older than a year

76. A technician finds a cap screw with six radial lines on the head holding a steering gear bracket on a school bus. A replacement is on hand with three lines. What is the correct action?

- A. Use a Grade 8 replacement, since the six-line marking identifies the strength the application requires
- B. Use the three-line bolt, because Grade 5 is stronger and resists fatigue better
- C. Use either bolt, because the thread size is the same and torque is the controlling factor
- D. Use the three-line bolt with a higher torque value to make up for the lower grade

77. The tail lights on a trailer flicker intermittently, and a test light shows good power at the seven-way connector but voltage drops when lights are on. Which fault is the most likely cause?

- A. A weak air spring, which is changing the lamp voltage when the trailer rides over bumps
- B. An over-inflated tire, which grounds the trailer lights through the rim
- C. A poor ground path or corroded ground pin that breaks the lamps' return path
- D. A worn kingpin, which is a part of the electrical circuit of the trailer lights

78. A technician needs to set the relief valve on a hydraulic circuit for a dump body. Which procedure is correct?

- A. Set the valve at twice the rated pressure to give a margin of safety
- B. Install a gauge, run the circuit to relief, and adjust to the specified pressure
- C. Adjust the relief valve by sound until the pump begins to whine loudly under load
- D. Tighten the relief valve fully so that the pump can never open it

79. A technician finds the system voltage reads 15.6 volts at the batteries while the engine runs at 1,500 rpm on an ambulance. Which condition is most likely?

- A. A weak battery that is pulling excess current from the alternator
- B. A slipping drive belt that is reducing the alternator output voltage
- C. A faulty horn relay that is adding extra load to the charging circuit
- D. A faulty voltage regulator or bad sensing connection, letting the alternator overcharge

80. A bus has cupped tire wear on the front tires and bounces several times after hitting a bump. Which service is the most appropriate?

- A. Install thicker springs to stiffen the ride and stop the bounce at once
- B. Move the front tires to the rear axle without further inspection
- C. Test the shocks and replace worn or leaking ones in axle pairs
- D. Reduce the tire pressure until the bounce disappears and wear evens out

81. A school bus engine uses coolant with no visible leaks, but the reservoir keeps dropping and white vapour appears at the tailpipe. Cooling system pressure test shows no external loss. Which fault fits the pattern best?

- A. A faulty low-coolant sensor that triggers false warnings only
- B. A loose fan belt reducing water pump flow and causing coolant to evaporate
- C. A thermostat stuck in the open position causing excess coolant to spill
- D. An internal coolant leak into a cylinder through a failed head gasket

82. A technician needs to measure the current drawn by a starter during cranking on a school bus. Which instrument is most suitable?

- A. A digital multimeter connected in series using its 10 amp current range
- B. An inductive clamp ammeter around the cable, rated for several hundred amps
- C. A test light connected between the starter terminal and ground
- D. An ohmmeter connected across the starter's main battery terminals

83. A technician finds that an ambulance with a hydraulic brake system has a spongy pedal after replacing a caliper. Which step is best to remove the air from the system?

- A. Bleed in the maker's sequence, usually starting at the wheel farthest from the master cylinder
- B. Add more fluid to the reservoir and leave the system standing overnight
- C. Bleed only the wheel with the new caliper and leave the other wheels untouched
- D. Open all the bleeder screws at once and pump the pedal until the fluid flows

84. A technician has installed a new clutch in a coach with an automated manual transmission. What must be done before the vehicle is returned to service?

- A. Disconnect the batteries for an hour so the control module memory is erased
- B. Nothing is required because the transmission control module adapts automatically in time
- C. Perform the clutch calibration or learn procedure with the manufacturer's service tool
- D. Drive the coach in first gear for 500 kilometres to wear in the clutch properly

85. An electric transit bus will not complete charging and shows an isolation fault code. Which tool is the most suitable for finding the cause?

- A. A standard test light connected to the 12 volt battery negative post
- B. An insulation resistance tester used on the high-voltage circuits
- C. A tire pressure gauge connected to the charge port as a continuity check
- D. A feeler gauge placed between the charge port pins to measure the gap

86. Before coupling a tractor to a trailer, a technician inspects a fifth wheel. Which condition must exist before backing under the trailer?

- A. The jaws open, the release handle set, and the trailer at the correct height
- B. The trailer landing gear retracted so that the trailer lowers onto the fifth wheel
- C. The air lines connected so that the brakes hold the trailer on the fifth wheel plate
- D. The jaws locked closed so that the kingpin can push them open as it enters

87. A technician measures a fuel pressure at the secondary filter inlet on an ambulance engine that is stalling at high load. The pressure falls steadily as engine speed increases. What is the most probable cause?

- A. An overfilled oil pan raising crankcase pressure and slowing the fuel transfer pump
- B. A worn camshaft lobe on the exhaust side raising the demand for fuel flow
- C. An air cleaner restriction reducing the volume of air into the engine
- D. A plugged primary fuel filter or restricted supply line starving the transfer pump

88. An A/C system on an ambulance gives poor cooling, with high readings on both the low and high sides and a hot discharge line. Which condition is the most likely cause?

- A. Overcharge of refrigerant or restricted condenser airflow, such as a stopped fan
- B. A refrigerant charge that is too low, which makes both sides read very high
- C. A bad cabin air filter, which raises the pressure on the discharge side
- D. A cracked windshield, which raises the temperature of the refrigerant

89. A technician diagnosing a CAN network fault on a transit bus finds that many dash lamps are lit and several modules cannot communicate. Which strategy isolates the fault fastest?

- A. Disconnect both batteries for an hour so the network resets itself completely
- B. Unplug modules or branches one at a time while watching for communication to return
- C. Clear all the codes with a scan tool and wait for the lamps to come back on
- D. Replace the instrument cluster first, since it displays all the warning lamps

90. A shop tests the brake fluid in an ambulance with a moisture tester and gets a reading above the replacement limit. What is the correct service action?

- A. Replace the master cylinder, because moisture is generated inside the cylinder bore
- B. Top off the reservoir with fresh fluid to dilute the moisture content
- C. Flush the system and replace the fluid with the specified type
- D. Leave it in service, since brake fluid only needs changing when it turns black

91. An automated manual transmission on a motorcoach is stuck in neutral and sets a fault for shift actuator air supply. System air gauge pressure reads normal. Which check is most appropriate?

- A. Replace the engine oil because a low viscosity oil disables the shift actuators
- B. Check the tire pressures, since the control module needs them to shift gears
- C. Remove the engine air cleaner to reduce the air demand on the shift system

D. Inspect the air supply line, filter, and regulator to the transmission's shift actuators

92. A shop crane is lifting a diesel engine out of an ambulance chassis. The operator extends the boom to its longest setting to clear the radiator support. What is the effect on the crane's lifting capacity?

- A. Capacity decreases as the boom is extended, so the rated load drops
- B. Capacity stays the same, as the rating is fixed by the hydraulic ram size only
- C. Capacity changes only when the legs are folded, not when the boom length is changed
- D. Capacity increases because the longer boom spreads the engine weight over more leverage

93. A technician slides the tandem on a dry van trailer to adjust weight distribution. Which check must be completed before the trailer is moved?

- A. Confirm that the trailer lights are working on the left and the right
- B. Confirm that the landing gear is in its fully lowered position on the ground
- C. Confirm that the tires have equal tread depth on each side of the tandem axles
- D. Confirm that every locking pin is fully engaged through its hole on both sides

94. A hydraulic cylinder on a refuse packer moves slowly, but system pressure reads normal when the cylinder is stalled. Which condition is the most likely cause?

- A. High pressure from the pump, because speed always increases with pressure
- B. Cold hydraulic fluid in the reservoir, which makes the cylinder sticky and silent when starting
- C. Reduced flow from a worn pump or restricted flow control, since speed depends on flow
- D. An oversized hose that stores extra fluid and slows the cylinder movement

95. A technician replaces the serpentine belt on a school bus engine and notices the belt tensioner arm bounces and the pulley wobbles. Which action is most appropriate?

- A. Tighten the tensioner pivot bolt past its torque specification to stop the movement of the arm
- B. Replace the tensioner assembly, because a worn damper or bearing will fail the new belt

- C. Reuse the tensioner and lubricate the pulley bearing with chassis grease
- D. Install a shorter belt so the tensioner has less travel and stops bouncing

96. After backing under a trailer and hearing the fifth wheel lock, what check confirms that the coupling is secure before connecting the air lines?

- A. Listening for the click of the lock while the engine is idling at full throttle
- B. Raising the landing gear and driving off at a moderate speed to see if the trailer follows
- C. A gentle tug test against the trailer brakes in low gear, plus a visual jaw check
- D. Applying the tractor parking brake and checking that the trailer does not move

97. A coach driver's air-ride seat will not hold its height and slowly sinks down while driving. Which check is most appropriate first?

- A. Inspect the air line, fittings, and seat bellows for leaks, and check the height valve
- B. Replace the entire coach suspension with no other checks, since the seat gets its air from the axles
- C. Lubricate the seat belt buckle so that the seat can rise more freely
- D. Drain the main air tanks to remove moisture that is lowering the seat

98. A technician reads the engine coolant temperature sensor, a negative temperature coefficient thermistor, and finds its resistance falling as the engine warms. What does this mean?

- A. The wiring has a short to ground, which always makes resistance fall in step with heat
- B. The sensor is behaving normally, since resistance drops as temperature rises
- C. The module is supplying too much reference voltage to the sensor in this state
- D. The sensor is faulty, because resistance should rise as the temperature increases

99. An air disc brake on a motorcoach shows one pad worn to the backing plate while the opposite pad on the same caliper has plenty of material. Which cause fits best?

- A. A compressor governor that is set too high for the brake system

- B. An air dryer that is passing too much moisture to the brake chamber
- C. A wheel speed sensor that is placed too close to the rotor surface
- D. Seized or corroded caliper slide pins preventing the caliper from floating evenly

100. A vocational truck shakes at 85 km/h road speed but is smooth at other speeds, and the driveline carries a recently replaced driveshaft. Which action is most appropriate?

- A. Check the driveshaft balance, runout, U-joints, and that it was installed in the correct phase
- B. Increase the tire pressures by 100 kPa to damp the vibration at that speed
- C. Replace the transmission, because only transmission faults cause speed-related shake
- D. Add weight to the front bumper to change the natural frequency of the vehicle at that speed

101. A shop finds metallic fuzz on the magnetic drain plug and glitter in the oil of a recently rebuilt engine in a rescue truck. What should the technician do next?

- A. Add a heavier oil grade so the particles are suspended and carried to the filter
- B. Clean the plug and return the truck to service after one more road test
- C. Inspect further for bearing or component wear, and plan to pull the pan to check them
- D. Change the oil and continue, since a small amount of metal is normal for any new engine

102. A scan tool shows several sensors on a school bus reading zero at the same time, including the boost, oil pressure, and rail pressure sensors. What is the most likely common cause?

- A. The scan tool is out of date and cannot display sensor values properly
- B. A short on the shared 5 volt reference circuit that feeds those sensors
- C. Three separate sensors have all failed in the same moment by coincidence
- D. The battery has too high a voltage for the sensors to measure accurately

103. A technician is inflating a tire on a multi-piece wheel assembly for a school bus. Which practice keeps the technician safe?

- A. Inflate to twice the specified pressure first to seat the bead, then bleed it off
- B. Hold the tire upright with one hand while filling from the side with the air line
- C. Hammer on the lock ring as the tire fills to keep the ring in position
- D. Use a restraining device with a clip-on chuck and stand clear of the trajectory zone

104. A coach engine shows blue smoke at start-up and excessive crankcase blow-by. A compression test shows low readings on all cylinders. Which conclusion is best supported?

- A. A DPF restriction raising the exhaust back pressure on every cylinder
- B. A thermostat opening too early, which lowers cylinder compression temperature
- C. A single sticking injector that is leaking fuel only into the number one cylinder
- D. General cylinder wear, with worn rings and liners, so the engine needs an overhaul

105. A coach has weak airflow from all vents, even with the blower on its highest speed, and the blower motor sounds normal. What should be checked first?

- A. The wheel bearings, which load the blower through the driveshaft
- B. The engine oil filter, which supplies the cabin air with pressure
- C. The cabin or HVAC air filter for restriction, and the ducts for blockages
- D. The A/C refrigerant charge, which is needed for the blower to produce airflow

106. A technician measures excessive side play in the camshaft of a school bus S-cam brake and finds the camshaft bracket bushings worn. What is the correct repair?

- A. Add extra grease through the fitting until the movement is taken up
- B. Replace the worn bushings and seals, then lubricate and check free rotation
- C. Weld the bracket to the camshaft tube so that the camshaft cannot shift
- D. Replace the brake chamber to remove the camshaft side play

107. A technician replaces a two-piece driveshaft slip yoke assembly and must install it correctly. Which practice prevents vibration from driveline phasing?

- A. Align the yokes' lug ears in the same plane, following any alignment marks or arrows
- B. Install the slip yoke with the grease fitting pointing at the engine only
- C. Leave the yokes loose until the road test shows which position runs smoothest
- D. Set the two yokes at 90 degrees to each other to cancel the speed fluctuations

108. A technician repairs a broken wire in a harness on a school bus chassis where vibration and moisture are present. Which splice method is best?

- A. A crimped butt connector with an adhesive-lined heat-shrink sleeve, strain-relieved along the harness
- B. A wire nut that is pushed over the twisted ends of the conductors
- C. A twisted joint wrapped with electrical tape and left uncovered
- D. A soldered joint with no strain relief or sleeve over the splice

109. A technician is tightening the nuts on a hub-piloted wheel on a transit coach. Which method gives an even clamping load?

- A. Tighten each nut fully in order around the circle, going from nut to nut in a clockwise direction
- B. Run all the nuts on with an impact wrench until the wheel stops moving
- C. Use the specified torque but add heavy grease to the wheel and drum mating surface
- D. Tighten the nuts in a crisscross sequence in stages to the specified torque on clean surfaces

110. A technician is topping off the automatic transmission on a transit bus that has an Allison unit. The shop has several automatic transmission fluids. Which fluid is appropriate?

- A. Heavy-duty engine oil, because its detergents protect the clutch packs from varnish
- B. Whichever fluid is already in the bay, provided the colour matches what drained out
- C. A fluid that meets the specification the transmission maker lists, such as TES-295 or TES-668
- D. Any fluid labelled Dexron, since all automatic transmission fluids share one friction package for every unit

111. A trailer's tires wear faster on one side of the rear axle, and the technician finds the axle is not square to the kingpin. What is the proper repair?

- A. Add weight to the trailer so that the axle straightens under load
- B. Align the axle to the trailer centerline using the maker's tracking procedure
- C. Rotate the tires to the opposite side every month to even out the wear
- D. Increase the tire pressure on the worn side until the wear pattern improves

112. A hydraulic line fitting on a rescue truck will not seal. The technician finds one fitting with 37-degree flare seats and a mating fitting with tapered pipe threads. What is the correct fix?

- A. Wrap the threads in extra tape and tighten until the fitting stops leaking
- B. Use a pipe wrench to force the fittings together until they bottom out
- C. Replace one fitting so both match, because the two thread forms cannot seal together
- D. Fill the joint with sealant and leave it to cure for a day before use

113. A school bus engine loses power on a cold morning, and the dash air restriction indicator is fully extended and locked in the red zone. Intake piping is intact. What is the correct service?

- A. Remove the filter element and run without it to confirm that airflow is restored
- B. Replace the air filter element, then reset the restriction indicator and verify it stays clear
- C. Replace the turbocharger, because a red indicator shows the compressor wheel has failed
- D. Tap the old element on the ground to knock the dust loose and reinstall it

114. A technician adds a winch motor circuit to a rescue truck and finds the supply wire runs hot under load and drops voltage. What is the correct fix?

- A. Add a second small fuse in series so that the circuit is better protected
- B. Install a thinner cable with a higher AWG number to reduce the cable weight and cost
- C. Wrap the cable in extra tape to keep the heat inside the insulation
- D. Install a heavier gauge cable with a lower AWG number sized for the current

115. A school bus technician sees air constantly escaping from the air dryer purge port with the compressor in the unloaded state. Which fault is the most likely cause?

- A. A leaking purge valve, supply check valve, or governor control line
- B. A fully saturated desiccant cartridge that is passing air through the dryer
- C. A brake pedal valve that is stuck open and exhausting at the dryer
- D. A slack adjuster that is leaking air through its grease fitting

116. A school bus driveshaft U-joint fails after a short time, and the technician finds the cross bearing seals are dry and rusted. What maintenance should have been performed?

- A. Over-tightening the bearing cap bolts so no moisture can reach the seals
- B. Lubricating the joint at the specified intervals until fresh grease purges
- C. Painting the cross and yoke ears to keep out road salt in winter
- D. Spraying the joints with penetrating oil every time the bus is washed

117. A tire pressure monitoring system warns of low pressure on one tire of a school bus, but the tire looks normal. What should the technician do first?

- A. Replace the control module, because the display fault is a software issue
- B. Ignore the warning, since the sensor is always right in all conditions
- C. Inflate the tire to the maximum sidewall pressure without any checks of the valve or sensor
- D. Check the pressure with a gauge when cold, and inspect the valve stem and sensor

118. A technician is servicing the battery thermal management system on a hybrid truck and must refill the coolant. Which approach is correct?

- A. Use any green antifreeze, because all coolants are suitable for all circuits
- B. Use plain tap water, because the battery circuit needs no corrosion protection
- C. Use the coolant specified by the manufacturer for that circuit, as some are low-conductivity types
- D. Use the engine coolant from the shop drum, as long as it is the same colour

119. A bus operating in northern winter weather stalls on the highway at minus 35 degrees Celsius, and the fuel filter is found full of waxy crystals. Which action solves the problem and prevents a repeat?

- A. Warm the fuel system, replace the filter, and use treated fuel with a working heater
- B. Remove the fuel filter permanently so wax cannot collect in the filter element or the lines
- C. Raise the fuel pump pressure so the wax crystals pass through the filter
- D. Add engine oil to the tank so the fuel stays fluid at low temperature

120. A roof light bar on an ambulance draws 25 amps from a 12.8 volt system. What power does the light bar consume?

- A. 2.0 watts
- B. 32 watts
- C. 512 watts
- D. 320 watts

121. A bus windshield wiper moves slowly and stalls on its upstroke. The wiper motor draws normal current when the arms are disconnected. What is the likely cause?

- A. A weak battery, which only affects the wiper motor when the arms are disconnected
- B. Binding in the wiper linkage or pivots, which loads the motor when connected
- C. A faulty washer pump, which controls the wiper speed through the switch
- D. A worn headlamp switch, which takes power away from the wiper system

122. A school bus is slow to build air pressure from 585 kPa to 690 kPa, and the compressor discharge line is hot and partly choked with carbon. Which action fits the finding?

- A. Replace the discharge line, then inspect the compressor for oil carry-over
- B. Install a smaller governor so the compressor loads sooner
- C. Increase the compressor drive belt tension until the buildup time shortens
- D. Clean the carbon off the outside of the discharge line and return the bus to service

123. A technician finds gear oil leaking from the drive pinion seal of an axle and notices a groove worn into the yoke seal surface. What is the correct repair?

- A. Fill the axle past the fill plug so that the oil reaches the seal at all times
- B. Install a new seal over the grooved yoke and top up the axle with oil
- C. Replace the seal and the yoke or install a wear sleeve, then check pinion bearing preload
- D. Apply sealant on the outside of the seal to stop the leak across the groove

124. A hub on a bus axle is too hot to touch after a short trip, and the brakes are free of drag. The wheel seal is dry and the bearings look dark. What is the likely cause?

- A. Under-inflated tires, which heat the hub through the sidewall flexing
- B. Over-tightened bearing adjustment or low lubricant level, causing excess friction
- C. A weak battery that is overheating the axle through the ground connection
- D. A worn shock absorber that is transferring heat into the hub

125. An ambulance diesel idles roughly and lacks power at low load, and a scan tool shows the EGR valve command at 0 percent but measured EGR flow remains high. Which fault is most likely?

- A. An EGR valve stuck partly open, diluting the intake charge at low load
- B. A DEF pump that is delivering too little fluid to the SCR catalyst
- C. A fuel injector with a seized needle holding it closed on one cylinder
- D. A turbocharger wastegate that is stuck closed and over-boosting the engine

126. A shop must replace a compressor in an A/C system on a transit bus. Which lubricant practice is correct?

- A. Skip the oil because the compressor is shipped with enough for any job
- B. Use engine oil, which is compatible with all refrigerants and compressors
- C. Use the type and amount of oil that the compressor maker specifies
- D. Use any available oil and adjust the amount by feel as the system runs

127. An ambulance shore-power inlet keeps tripping its ground fault circuit interrupter whenever the 120 volt supply cord is connected in wet weather. What is the most likely cause?

- A. A battery charger that has been set to a slightly higher voltage than before
- B. A GFCI that trips because the ambulance has too many 12 volt accessories
- C. The 12 volt system alternator is feeding current backward into the shore line
- D. Moisture or damaged insulation at the inlet or cord, allowing current leakage to ground

128. During a wheel-end job on a school bus, an apprentice skips placing wheel chocks, saying the parking brake is applied. As the journeyperson, what is the best response?

- A. Take over the job quietly and finish it alone so the apprentice is not embarrassed
- B. Report the apprentice to the manager before any conversation takes place
- C. Explain why chocks are required, have the apprentice place them, and model it
- D. Let it pass this once, since the spring brakes are holding the bus securely

129. The evaporator coil on a refrigerated trailer is heavily frosted, and the unit does not seem to run a defrost cycle. Which cause should be investigated?

- A. An engine oil level that is slightly high, which blocks the airflow to the coil
- B. A fuel tank that is slightly low, which is the cause of every frost build-up
- C. A stuck trailer door latch, which prevents the defrost heater from starting
- D. A defrost termination or timer fault, or a heater or sensor fault

130. A hydraulic cylinder has a bore diameter of 80 millimetres and is working at 12 megapascals. What force does it produce on the extend stroke?

- A. About 60.3 kilonewtons
- B. About 15.1 kilonewtons
- C. About 120.6 kilonewtons
- D. About 76.8 kilonewtons

131. A transit coach with a dual air brake system loses pressure in the primary circuit because of a ruptured line, while the secondary circuit holds. What should happen when the driver brakes?

- A. The spring brakes apply fully at once and lock every wheel on the vehicle in a skid
- B. The secondary circuit still applies its brakes, with reduced braking and a low-pressure warning
- C. The ABS takes over and applies the front brakes using its own air supply
- D. All service brakes fail immediately because the circuits share one tank

132. A tandem drive axle bus shows tire scrub and driveline binding during tight turns on dry pavement, and the technician finds the inter-axle differential lock engaged. What is the correct explanation?

- A. The lock only affects the engine power rating and has no effect on tire wear
- B. The lock is working correctly, because it should be on whenever the vehicle is turning
- C. The lock has failed open, which makes both axles spin at different speeds
- D. The lock ties the axles together, preventing the speed difference needed in turns

133. A school bus wanders on the highway and the steering feels loose. With the front axle raised, the technician finds vertical play at the top of the steering knuckle. What does this suggest?

- A. Worn upper control arms, which this type of axle does not have at all
- B. An under-inflated tire, which does not show any movement at the knuckle
- C. Worn kingpin bushings or bearings that need to be measured and replaced to specification
- D. A loose air line to the brake chamber that is rattling at the knuckle

134. A shop inspects an engine that has oil leaking from several seals and the dipstick tube, and the closed crankcase ventilation filter is found saturated and plugged. What is the likely effect of the plugged filter?

- A. Excess crankcase pressure that pushes oil past seals and out of the dipstick tube
- B. Higher oil pressure from the pump because fewer vapours enter the sump
- C. Faster oil cooling because the vapour no longer carries heat from the pistons
- D. Low crankcase pressure that pulls outside air past the front and rear seals

135. A technician finds white and green crusty deposits around the positive terminal of a battery on an ambulance, and the cable clamp is loose. Which service is correct?

- A. Replace the positive cable only and leave the terminal deposits for the next service
- B. Disconnect the cables, neutralize and clean the deposits and terminals, retighten, and apply a protectant
- C. Pour water over the terminals while connected and wipe the deposits away with a rag
- D. Scrape the clamp with a screwdriver and leave the corrosion on the battery top

Practice Exam 11: Answer Key and Explanations

1. A — A parasitic draw is isolated by measuring current in series with the battery and removing fuses one at a time until the reading falls, which identifies the circuit. Voltage readings are too crude, the alternator does not draw current with the engine off in normal conditions, and replacing batteries does not find the fault.

2. D — Short trips and long idling keep exhaust temperatures below the level that oxidizes soot, so soot accumulates and the control module asks for an active or parked regeneration. A backwards filter would not fit a normal exhaust system, and high boost does not load soot this way. A false coolant reading would not cause repeated soot requests.

3. B — Steering wheel play comes from looseness anywhere between the wheel and the tires, including linkage ball joints, the drag link, loose gear mounting, and internal gear lash, so these are checked before adjustments. A pump or fluid level problem affects assist rather than free play, and tire pressure does not remove mechanical lash.

4. B — The governor senses pressure and signals the compressor to unload at cut-out, usually about 860 kPa (125 psi). If pressure keeps climbing without unloading, the governor or its unloader line is not responding. A purge valve problem would lose pressure, leaking chambers would lower it, and slack adjusters do not control compressor loading.

5. A — Jumping out of one specific gear when load reverses points to wear in the shift fork pads, shift rail detent, or the gear's engagement teeth, letting the gear walk out of mesh on deceleration. Range air supply, driveshaft balance, and a slightly low oil level do not selectively release one gear, so they would not repeat.

6. C — Removing the grounded negative cable first takes the chassis out of the circuit, so a wrench touching the body while on the positive terminal cannot complete a path and arc. Starting with the positive leaves the whole body live to that terminal. Removing the key does not isolate the battery, and a bridge defeats the purpose.

7. D — No power at the ABS pin means a break, a poor connection, or a missing ground in that circuit, so the circuit is traced from the connector back toward the source. Replacing a valve without power testing is premature, a larger fuse can overheat wiring, and wiring ABS to a marker lamp circuit is unsafe.

8. C — When a relief valve keeps opening, the pump's output flows across it at full pressure, and the hydraulic power is converted straight into heat, so the reservoir temperature climbs even with a correct level. A free-flowing breather, a new return filter, or a clean strainer reduce restriction and do not generate heat. Check the relief setting and circuit load.

9. D — AGM batteries are sealed and sensitive to overvoltage, so they need a charger profile with the correct voltage limits to avoid damage and gassing. Cells cannot be topped up, a warm case means the charge rate is too high, and chargers do differ in their voltage settings, so using any charger risks overcharging.

10. B — Active regeneration injects extra fuel late in the cycle, and some of it can wet the cylinder walls and reach the oil, especially during frequent regenerations at low load. This lowers viscosity and carries a fuel smell. Coolant in oil looks milky and does not smell like fuel, and a fuel tank cannot flow into the sump.

11. A — A very low refrigerant charge opens the low-pressure cutout switch to protect the compressor from running without lubrication, so the clutch does not engage and the leak must be found and repaired before recharging. Oil level, a clean filter, or an open heater valve do not trigger the low-pressure cutout.

12. C — Foamy fluid and a whining pump show air in the hydraulic system, most often from a low reservoir level or a loose or collapsed suction hose that lets air in. A bent drag link or a low tire does not aerate the fluid, and turning past the stops affects heat but not air entrainment.

13. B — With brakes released and the engine off, the system should lose no more than about 14 kPa (2 psi) per minute for a single vehicle, so 55 kPa a minute shows a significant leak. Compressor condition does not cause a fall in held pressure, and draining the tanks does not stop leakage.

14. A — Oil on clutch facings makes them grab and release, producing chatter, and the usual sources are the engine rear main seal and the transmission input shaft seal, so those must be inspected and repaired along with the clutch. Fuel, coolant, and belt problems do not place oil on the disc.

15. D — Torn cab mounts let the cab move and transmit vibration, so the damaged parts are replaced and the fasteners tightened to the maker's torque with the cab properly aligned. Grease does not restore torn rubber, overtightening damages the mounts, and a solid mount transfers all road and engine vibration into the cab.

16. B — The final connection can spark, and a dead battery may vent hydrogen, so the last clamp goes on a clean ground away from the battery, such as an engine bracket. Clamping directly on the negative terminal or near a fuel line keeps the spark near flammable vapours, and the positive clamp belongs on the positive post.

17. C — Extended-life coolants may need a supplemental additive at intervals to maintain protection, and the maker's product should be used. Mixing in conventional green coolant can cause gelling and reduces the life of extended-life coolant. Plain water gives no freeze or corrosion protection, and a random inhibitor may be incompatible with the coolant.

18. A — High-voltage service requires insulated gloves of the proper class, removal and lockout of the service disconnect, the specified wait for stored energy to fall, and a meter check to confirm zero voltage. Cutting cables is dangerous, a key switch does not isolate every high-voltage source, and leather gloves are not rated for electrical protection.

19. D — A gauge test at full lock checks pump relief pressure, and a low reading shows that the pump or its relief valve cannot supply enough pressure for assist, so it needs service. Tread depth, fluid cleanliness, and a column joint do not cause low hydraulic pressure at the pump. Restoring pump pressure returns normal steering effort.

20. A — A stuck spring brake can be caged with the correct tool, which mechanically compresses the spring and frees the brake so the vehicle can be moved. The chamber must then be replaced, never opened, because the compressed spring can cause serious injury. Hammering is unsafe and does not repair a fault, and removing the push rod defeats the brake.

21. B — Hard shifting at a stop means the clutch is not fully releasing, usually from too much free play, air in a hydraulic release system, or worn linkage that cuts the travel reaching the release bearing. A strong return spring, a slightly high oil level, or driveshaft balance do not stop the clutch from releasing.

22. C — A reading across the ground side with the load on means current is losing voltage in the ground path, and 0.9 volts is well above a typical limit of a few tenths of a volt, so the ground connection is corroded or loose. A shorted filament would draw more current, and overcharging does not cause a ground-side voltage drop.

23. D — At highway speed ram air cools the radiator, so a failed or disengaged fan clutch shows up when airflow depends on the fan, such as at idle in warm weather. A weak cap or leaking head gasket would produce loss or bubbling at other times, and a faulty sensor would not make the hot upper hose and real overheating.

24. B — When a hazardous product is decanted into a container, the worker must apply a workplace label with the product identifier and safe handling information, and the safety data sheet must be accessible. Single-shift use is not an exemption for decanted containers, and a name alone gives no hazard guidance. The full supplier label is only needed for the supplier container.

25. D — A stiff landing gear needs inspection for damage and lubrication according to the maker, since internal wear, bent legs, or dry bearings are common causes. Engine oil is not the correct lubricant, a cheater bar breaks the gears, and a welded leg removes a safety and service function. Finding the actual binding point prevents repeated damage.

26. A — A cylinder that drifts with no external leak and a neutral valve is losing pressure internally, either past a worn piston seal or through a leaking check or load-holding valve. Reservoir level, pump

size, and hose length do not make a cylinder creep when the valve is in neutral. Testing the seal means holding the cylinder under load.

27. C — A vehicle pulls toward the side with less positive caster, so a difference from side to side causes a steady pull on a flat road, and alignment to equal values corrects it. Equal toe does not cause a pull, crown compensation is not a reason to accept unequal caster, and box lash causes wander.

28. C — A coil resistance of about 85 ohms shows the winding is intact, and an open circuit across terminals 30 and 87 is expected with the coil de-energized because those contacts are normally open. A welded contact would show continuity, and an open coil would read infinite resistance. Testing the coil and contacts separately avoids needless replacement.

29. A — Automatic slack adjusters should hold stroke without manual correction, so a repeatedly long stroke signals a fault in the adjuster, camshaft, bushings, or foundation components. Routine hand adjustment hides the cause and can mask a failing brake. Replacing every chamber or lengthening a push rod does not address the underlying wear.

30. B — Range shifts are made by an air-operated cylinder, so the filter regulator, air lines, and range valve are checked first when the shift fails with good system pressure. Countershaft bearings, clutch springs, and axle ratio do not control the range cylinder, and a mechanical fault would be investigated after the air supply is cleared.

31. D — During a leakage test, air at the exhaust pipe points to a leaking exhaust valve, air at the intake points to an intake valve, bubbles in the coolant suggest a head gasket or crack, and air at the crankcase breather or dipstick indicates the rings. Here air escapes at the exhaust, so the exhaust valve is at fault.

32. A — Air and moisture inside a refrigerant circuit damage the system, so after a repair it is evacuated with a vacuum pump for the specified time and checked to hold vacuum, which also boils off moisture and shows leaks. Charging first leaves air in, shop air carries moisture, and water must never enter the system.

33. B — A fuse that keeps blowing at the correct rating means an overload or a short to ground, which must be found and repaired. A larger fuse removes protection and could allow wire overheating, and a wire jumper does the same. Removing the lamps would not fix the fault and the lights are a legal requirement.

34. D — Feathering, a saw-tooth edge across the ribs, is a classic toe wear pattern from the tires being dragged sideways, so toe is measured and corrected. Low pressure wears the shoulders, imbalance causes spot or cupped wear, and a single worn kingpin would not produce matched patterns on both tires. Correcting toe stops further tread loss.

35. C — Oil in the intake piping and charge air cooler is a classic sign of a failing turbo seal or a restricted drain, since the compressor wheel pushes oil into the air stream. A rear main seal leaks at the bell housing, a cracked oil cooler contaminates coolant, and a fuel filter restriction affects fuel supply, not oil in the intake.

36. D — Oil-saturated desiccant that fails within months usually means the compressor is passing oil into the air stream, through worn rings or a restricted inlet, so the compressor condition must be checked. A low governor setting, leaking chambers, or low coolant do not push oil into the dryer. Replacing the cartridge alone will repeat the failure.

37. C — Most manual transmissions are filled to the bottom of the fill plug opening with the vehicle level, and checking by feel or sight there is the standard procedure. Overflowing from the breather can pressurize the case, running the engine while checking through a drain plug is unsafe, and these units usually have no dipstick.

38. B — A standard thermal flasher relies on the higher current of incandescent bulbs, and the low draw of LEDs makes it flash fast, so an electronic flasher or load resistor restores the correct rate. Battery rating, alternator size, and extra lamps do not correct the load mismatch in the flasher circuit.

39. A — Urethane adhesives cure by reacting with moisture, and the safe drive-away time published by the manufacturer depends on temperature, humidity, and the product, so the bus is not released before that time because the glass is a structural part of the cab. Pressure alone does not set the bond, and rain does not guarantee a proper cure.

40. C — Equal diagonals between matching points show a square frame, and a difference means the frame has been sprung or twisted and must be corrected to the maker's tolerance. Tire size and spring rating do not alter the points being measured, and unequal diagonals are not normal. Straightening restores handling and prevents uneven tire wear later.

41. B — At hot idle the pump turns slowly and the oil is thin, so excess bearing clearance bleeds off pressure, and revving raises pump output enough to recover. A blocked cooler or a misinstalled pickup would affect pressure across the range. Fuel dilution can lower viscosity, but a stuck injector would not give this speed-dependent pattern.

42. A — After isolating and locking out a hydraulic system, the remaining steps are to relieve or block stored energy, such as a raised platform or trapped pressure, and then verify by testing the controls that nothing moves. The person who applies a lock keeps the key. Starting the engine or cycling the lift would reintroduce the hazard.

43. D — Spring brakes release only when supply pressure rises above their release value, so low supply pressure at the trailer points to a leak or restriction in the line, a damaged glad hand, or a faulty tractor protection valve. Tires, landing gear, and mud flaps are not connected to the supply circuit.

44. D — A hydraulic hose must be rated for at least the system pressure, be the correct length to allow for movement, and be routed without twist or contact with sharp edges, since twisting weakens the reinforcement. A lower rating or a tight hose risks bursting, and deliberate twisting shortens the hose life.

45. B — If the sensor resistance is normal, the signal can still be corrupted by an excessive air gap, a damaged or contaminated tone ring, or a poor connector, so those are inspected next. Diaphragms,

governor setting, and slack adjuster stroke are not part of the speed signal path and do not set a sensor circuit code.

46. C — In neutral with the clutch engaged, the input shaft and countershaft gears and bearings spin, and noise that disappears when the clutch is released points to the input-side components. A rear wheel bearing or output shaft bearing noise would depend on road speed, not on clutch engagement. Output shaft problems follow vehicle speed instead.

47. A — Alternating red lamps depend on a flasher that switches between the left and right circuits, so a failed flasher module or a wiring fault that ties the circuits together makes them flash together. The amber lamps use a separate circuit and work, which rules out a general power problem. Checking the flasher output pins confirms it quickly.

48. A — White smoke on a cold start is vaporized, unburned fuel from cylinders that are too cold to ignite it well, and a nonworking intake heater or glow system is a common cause in severe cold. A stuck valve or head gasket would not clear up after warming, and an air cleaner housing is not filled with anything.

49. B — With hot coolant entering and a cool outlet hose, little flow is passing through the core, so it is restricted or plugged and needs flushing or replacement. A blower motor does not control hose flow, the A/C charge does not affect the heater core, and a thermostat fault would affect both hoses.

50. C — Frame rails are heat treated, and drilling or welding in the highly stressed flanges can cause cracks, so brackets use existing holes or holes in the neutral area of the web as the manufacturer allows. Holes in the top flange, welds across the bottom flange, and notches near the axle all reduce the rail's fatigue strength.

51. D — The battery management system limits charging current when the battery is cold or close to full to protect the cells, so regeneration is reduced and the friction brakes take a larger share. Frozen pads, the charge port cover, and the air dryer do not control regenerative braking. Cell protection takes priority over energy recovery here.

52. A — Correct geometry keeps the push rod and arm near 90 degrees at half stroke so the cam rotates efficiently, and a wrong angle reduces brake torque and causes uneven wear. The angle does not influence compressor cut-out, ABS air gap, or dryer purge timing. The arm may need repositioning on the camshaft splines.

53. B — Automatic transmissions rely on the cooler and adequate fluid to remove the heat created by torque converter slip, so a restricted cooler, bent line, or low fluid level are the leading causes of overheating. A cabin air filter, an unrelated belt, or a lift hose do not affect transmission fluid temperature.

54. D — A battery isolator is designed to let the alternator charge both banks but keep them separate when parked, so a shorted diode or stuck relay lets the house loads drain the starting battery. An overcharging alternator does not run when the engine is off, and a switched-off headlight or small cable does not link the banks.

55. C — Black smoke under load means too much fuel for the air available. A hiss at the charge air cooler with low boost points to a leak that loses pressurized air, so repairing it restores the correct air-fuel ratio. The oil filter and DEF dosing do not control boost air, and an exhaust brake linkage affects only retarding.

56. A — Leveling valves meter air into the bag to hold the specified ride height, and a slipped linkage changes that height, so it is reset to specification and secured. Spring seat shims, tire pressure changes, and shock replacement do not adjust the air spring's ride height and may hide the fault.

57. C — Diagnosis begins with the simple items, so the wiring, excitation signal, and drive belt on the failed alternator are checked before any part is replaced. Disconnecting the good unit worsens the voltage problem, batteries do not cause an alternator to stop producing output, and raising idle permanently is not a repair.

58. B — Welding current seeks the easiest path to the clamp, so the clamp belongs close to the weld, and the battery and alternator must be disconnected to protect electronics. A distant clamp at a bumper, block, or wheel stud sends current through bearings, wiring, and modules. An ignition switch off does not isolate any circuit from welding current.

59. D — A blocked condenser cannot reject heat, so head pressure rises and cooling falls, and cleaning the coil and verifying fan operation is the first remedy. Adding refrigerant would overcharge the system, closing the discharge valve is hazardous, and the evaporator is a separate part from the condenser. Restoring airflow lowers head pressure and restores cooling.

60. A — Milky hydraulic fluid is a sign of water contamination, which promotes corrosion and wear, so the fluid and filters are replaced after finding the entry point, such as a failed breather, cooler, or seal. Oxidation darkens fluid, additives do not make it milky, and a full reservoir does not. Water in hydraulic oil must be removed completely.

61. D — A drum beyond the discard dimension is unsafe because thin walls overheat and may crack, and further machining is not permitted. Drums and linings should be replaced in axle sets so braking stays balanced. Heat checking with excess wear is not cosmetic, and mismatched sides could cause pull on braking.

62. B — Fluid level readings depend on temperature, vehicle attitude, and engine status, so the maker's procedure calls for a level vehicle, specified gear, a running engine at idle, and the fluid at operating temperature unless a cold check chart is used. Parking on a slope or checking at a random temperature gives a false reading.

63. C — DEF must be a 32.5 percent urea solution meeting the specification, and a diluted sample can cause poor NO_x conversion, faults, and derates. The system should be drained, flushed as the maker directs, and refilled with proper fluid. Adding powder or water cannot restore a controlled concentration, and the module cannot fully compensate for bad fluid.

64. C — A bubbling air spring has failed and must be replaced, with the mounting and surrounding parts inspected for chafing, misalignment, or abrasion that caused it. Sealant is not an approved repair, a

higher cut-out pressure only delays the sag, and running on the bump stops damages the suspension and is unsafe.

65. B — A drop of two volts across closed solenoid contacts means high resistance there, so little voltage reaches the starter motor, causing clicking without cranking. A healthy circuit would show a few tenths of a volt. An ignition switch cannot double the voltage, and a seized engine would show a different pattern.

66. A — A combustion-leak (block) test detects exhaust gases in the coolant vapour, and a cooling system pressure test with bubbles at the cap supports it. Oil viscosity, fuel rail pressure, and cranking speed do not show whether combustion gas is reaching the coolant, so they cannot confirm a head gasket leak.

67. D — Linings contaminated with oil or grease cannot be restored by washing, so they must be replaced along with the failed seal. Axle-set service keeps friction and braking balanced across the axle. Solvent leaves a residue and weakens the bond, and baking does not remove the oil absorbed into the lining material.

68. D — A speed sensor fault code leads the technician to test the sensor, harness, and connector before replacing parts, since the control module needs the signal to command shifts and a missing signal can hold a range. Replacing the module without tests is guesswork, extra fluid does not improve the signal, and clearing codes ignores the fault.

69. B — Wind noise and rattling from a door that looks sound often come from a misaligned striker or uneven seal compression, so the striker and weatherstrip contact are checked and adjusted. Grease on weatherstrip attracts dirt, replacing glass does not fix a seal alignment problem, and overtightened hinge bolts can damage the hinges.

70. C — The mode doors inside the HVAC housing direct airflow to the defroster, face, and floor, and a failed actuator or stripped linkage leaves the door stuck in one position. A heater core leak affects coolant, the headlamp fuse is unrelated, and a compressor belt does not control airflow direction. Replacing the actuator restores control of airflow direction.

71. A — When the batteries and cables are sound but the starter draws high current and turns slowly, the load is mechanical, such as worn starter bushings, a bent armature, or heavy oil at low temperature. A relay feeding too little current would cause low draw, and neither the alternator nor the DPF loads the engine during cranking.

72. D — The center bolt locates the spring on the axle, so a broken bolt lets the axle shift and must be repaired by replacing the part or the spring, realigning the axle, and checking the U-bolts. Welding the axle is unsafe and unapproved, and a shock absorber does not hold axle position.

73. C — Compression-release retarders depend on correct lash settings so the exhaust valves open at the right time, and the manufacturer's procedure and sequence must be followed. Raising oil pressure, changing a thermostat, or setting lash by feel at speed does not produce a controlled setting and is unsafe. Correct lash restores retarding power.

74. B — Pulling during braking occurs toward the side with stronger braking, and the longer push rod stroke on one side indicates that brake is late or weak, which causes imbalance. In this scenario correcting the adjustment or worn parts on the affected axle restores balance. ABS and compressor output do not supply one side only.

75. A — Burnt-smelling dark fluid with metal particles indicates overheated clutches and wear, so a fluid change alone will not cure it and the unit needs inspection or overhaul. A routine change cannot restore worn friction material, and fine metal on a magnet is not typical of a healthy unit after break-in.

76. A — Six radial lines mean SAE Grade 8, and three lines mean Grade 5, which is weaker. A critical steering bracket must be reinstalled with a fastener of at least the original grade, never a lower one. Raising torque on a weaker bolt risks yielding or breaking it, and matching thread size alone does not match strength.

77. C — A voltage that drops under load and flickering lamps indicate resistance in the circuit, and the ground path is a frequent culprit, including a corroded ground pin at the connector or a loose trailer ground. A kingpin, air spring, and tire are not part of the lighting circuit's electrical path.

78. B — Relief valves are set with a gauge in the circuit, adjusted to the maker's pressure while the circuit is held at its relief point, and never above the lowest component rating. Setting by sound is inaccurate, a fully closed valve can burst hoses, and doubling the pressure exceeds component limits.

79. D — Charging systems for 12 volt batteries normally regulate near 13.8 to 14.8 volts, so 15.6 volts means the regulator or its sensing circuit is allowing excess output. A weak battery or extra load would lower voltage, and a slipping belt would reduce, not raise, alternator output. Testing sensing voltage at the regulator confirms the fault.

80. C — Failed shocks let the wheels bounce, which cuts a cupped tread pattern, so weak or leaking units are replaced in pairs and the wheels balanced. Lowering pressure harms tire life and handling, stiffer springs do not damp motion, and rotating the tires leaves the cause unaddressed. Fresh shocks restore tire contact with the road surface.

81. D — Coolant disappearing with no external leak and white vapour from the exhaust indicates coolant entering a cylinder and being burned off, which points to a failed head gasket or a cracked head. A slipping belt or open thermostat does not remove coolant, and a sensor fault would not account for the falling reservoir level and vapour.

82. B — A starter draws hundreds of amps, far beyond a multimeter's current range, so an inductive clamp reads the current safely without breaking the circuit. Connecting a meter in series would blow its fuse or damage it, a test light shows only presence of voltage, and an ohmmeter must never be used on a live circuit.

83. A — Air trapped after opening a hydraulic system makes the pedal spongy, and bleeding in the manufacturer's sequence, typically beginning farthest from the master cylinder, pushes the air out systematically. Opening all bleeders at once, waiting overnight, or bleeding a single wheel can leave air in lines and may pull more air in.

84. C — Automated manual transmissions control the clutch electronically and need the touch point and engagement characteristics learned after a clutch replacement, which is done with the manufacturer's service tool. Waiting for it to adapt can cause poor engagement or damage, and a long drive or battery disconnect does not calibrate it.

85. B — An isolation fault means a high-voltage conductor has leaked toward the chassis, so an insulation resistance tester, used with the maker's procedure to separate circuits and components, locates it. A test light or gauge is not rated for high-voltage insulation checks, and a feeler gauge does not measure resistance. Isolating each branch narrows the leak quickly.

86. A — To couple correctly, the jaws are open with the release handle set, and the trailer is at a height that lets the kingpin enter the throat and ride onto the plate, after which the jaws lock around the pin. Closed jaws or retracted landing gear prevent a safe coupling, and air lines are connected after the lock is confirmed.

87. D — Fuel pressure that drops with rising demand shows that supply is restricted upstream, so a plugged primary filter, collapsed hose, or clogged pick-up starves the transfer pump. Camshaft wear and air restriction do not lower fuel supply pressure, and crankcase pressure has no direct effect on the transfer pump. Checking pressure upstream of each filter locates the restriction.

88. A — High pressures on both sides with poor cooling point to heat that cannot be rejected, so overcharge or poor condenser airflow, such as a failed fan or blocked coil, are the leading causes. A low charge would give low pressures, and a cabin air filter and windshield do not raise the pressures in this way.

89. B — Network faults such as a shorted module or wire can pull down communication for everything on the bus, so unplugging branches one at a time identifies the one that restores communication. Replacing the cluster is guesswork, battery disconnection rarely fixes a hard fault, and clearing codes does not locate the cause.

90. C — Brake fluid absorbs moisture from the air, which lowers its boiling point and promotes corrosion, so fluid above the limit must be flushed and replaced with the specified type. Topping off only dilutes, colour alone is not a test of moisture content, and the master cylinder does not produce water.

91. D — Automated transmissions use air-operated actuators with their own filters and regulators, so a restricted line or filter can starve them even when the system gauge reads normally. Engine oil viscosity, tire pressure, and the engine air cleaner have no connection to the shift actuators' air supply. Checking line pressure at the actuator confirms supply loss.

92. A — A shop crane's rating is posted for each boom position, and it falls as the boom is extended because the load acts at a greater distance from the base. Use the shortest boom setting that gets the job done. The hydraulic ram is only one limit, and leg position changes stability but does not cancel the boom reduction.

93. D — After sliding a tandem, all locking pins must be fully engaged through the holes on both sides, because a partly locked tandem can shift during braking. Landing gear position, tread depth, and lighting matter for other reasons but do not confirm the tandem is locked. A visual check through both pin holes takes seconds.

94. C — Cylinder speed depends on flow rather than pressure, so a slow actuator with normal pressure at stall indicates reduced flow from a worn pump, a restriction, or a flow control set too low. Pressure sets force, and an oversized hose does not slow the cylinder. Measuring pump flow against specification confirms the diagnosis.

95. B — A bouncing tensioner arm or wobbling pulley indicates a worn damper or bearing that cannot hold belt tension, so replacing the tensioner prevents the new belt from failing early. A shorter belt, overtightened bolt, or grease will not repair internal wear and can cause misalignment or damage. Worn tensioners also cause belt squeal and uneven wear.

96. C — A gentle tug test with the trailer brakes applied, and a visual inspection of the locking jaws around the kingpin, confirms a secure coupling before the vehicle moves. Raising the gear before this check and driving off risks a drop, and the tractor parking brake and a click sound do not prove the lock.

97. A — A slowly sinking air seat points to an air leak in the seat's supply, bellows, or height valve, so the line, fittings, and bellows are checked with soap solution. The seat is not supplied by the axles, a buckle has no part in height control, and draining the main tanks does not repair a leak in the seat circuit.

98. B — An NTC thermistor has resistance that decreases as temperature rises, so a falling reading during warm-up is the correct behaviour and the control module reads it as a falling signal voltage. A fault would show a fixed or erratic reading, not a steady decrease with temperature. A reading that never changes would indicate a fault instead.

99. D — A floating air disc caliper moves on slide pins so both pads share the load, and seized pins let one pad drag and wear quickly while the other barely contacts the rotor. Dryer moisture, sensor placement, and governor setting do not cause uneven pad wear on a single caliper. Replacing pins and servicing the caliper restores even wear.

100. A — A vibration at a particular road speed after a driveshaft change suggests imbalance, runout, a worn U-joint, or incorrect phasing, so these are verified in order. Changing tire pressure, replacing the transmission, or adding bumper weight does not address the likely driveline cause. Starting with the driveshaft balance is the logical first check.

101. C — Visible metallic glitter in the oil is not normal break-in debris and suggests bearing or other internal wear, so the cause must be found by inspection before more damage occurs. Changing oil, adding heavier oil, or cleaning the plug hides the symptom and risks engine failure. Pulling the pan to inspect bearings confirms the diagnosis.

102. B — Sensors that share a 5 volt reference all read zero when that supply is shorted to ground or lost, so the common reference circuit is the first suspect. Three simultaneous sensor failures would be

unlikely, battery voltage does not drive such a pattern, and an old scan tool would not show real zeros for several sensors.

103. D — Multi-piece wheels can release violently if the lock ring is not seated, so inflation must occur inside a restraining device with a clip-on chuck and the technician standing outside the trajectory zone. Overinflating, steadying the tire by hand, and hammering on the lock ring during filling are all dangerous. Following this routine prevents serious injury.

104. D — Low compression on all cylinders together with blue smoke and heavy blow-by indicates worn rings and liners across the engine. A single injector would affect only one cylinder, a DPF restriction raises exhaust back pressure but does not reduce compression, and a thermostat has no direct effect on cylinder sealing.

105. C — A blower that sounds normal but delivers weak flow usually faces a restriction, so a plugged cabin filter or blocked ducts are the first items to inspect. The oil filter, refrigerant charge, and wheel bearings do not affect the volume of air moving through the HVAC system. Replacing the filter restores normal airflow quickly.

106. B — Worn camshaft bushings let the shaft shift and bind, which reduces braking efficiency and accelerates wear, so new bushings and seals with correct lubrication are the repair. Grease cannot replace missing bushing material, welding the bracket is unsafe, and the brake chamber does not control camshaft side play. Bushing play can be measured with a pry bar.

107. A — On a shaft with two universal joints, the yokes on the same shaft are kept in the same plane so the speed variations of one joint cancel those of the other, and arrows or marks identify the correct positions. Setting them 90 degrees apart doubles the vibration, and trial and error is unreliable and unsafe.

108. A — In a vibrating, wet environment, a crimped splice sealed with adhesive-lined heat-shrink keeps out moisture and supports the joint, while strain relief prevents stress at the wire. Tape unravels, a bare soldered joint is brittle and prone to cracking, and wire nuts are not suitable for vehicle wiring. Heat-shrink sleeves seal the joint against road spray.

109. D — Even clamping needs a crisscross sequence in stages up to the maker's final torque, on clean, unpainted, undamaged mating surfaces. Tightening around the circle distorts the wheel, an impact wrench alone gives uncontrolled torque, and grease between the wheel and drum mating faces lets the wheel loosen. Retorque the nuts after the first drive.

110. C — Automatic transmissions are specified by the manufacturer's fluid approval, and Allison units call for TES-295 or TES-668 type fluids with the correct friction characteristics. Generic Dexron, engine oil, or colour matching can cause clutch slip and damage. Fluid colour tells nothing about specification, and engine oil is formulated differently. Always follow the transmission maker's approved fluid list.

111. B — Wear caused by an axle that is out of square, a tracking problem, is cured by aligning the axle with the trailer using the correct procedure and repairing any damaged mounts. Rotation hides the

problem, pressure changes the footprint but not the alignment, and added weight would not straighten the axle.

112. C — A 37-degree flare fitting seals on a flared seat, while a tapered pipe thread seals by thread deformation, so mixing the two cannot form a reliable seal, and the mismatched part must be replaced with the correct type. Tape, force, or sealant will not make incompatible forms seal under pressure.

113. B — A locked indicator in the red zone means the filter restriction has reached its limit, so a new element is installed and the indicator reset. Tapping a spent element damages the media and does not restore capacity, and running without a filter lets abrasive dust into the engine. The indicator does not monitor turbocharger condition.

114. D — A hot wire with a voltage drop is undersized for the current, and the fix is a larger conductor, meaning a lower AWG number, with correct length-based sizing. A thinner cable would run hotter, tape traps heat, and an extra fuse does not reduce resistance in the cable. Cable sizing depends on current and length.

115. A — Continuous air at the dryer purge port with the compressor unloaded points to a leaking purge valve or governor signal problem, or a leaking check valve that lets tank air flow backward. A saturated cartridge affects moisture removal, a pedal valve exhausts at its own port, and a slack adjuster is mechanical.

116. B — Greaseable U-joints need lubrication at the maker's interval, pumped until fresh grease appears at all four seals, which flushes out moisture and contamination. Penetrating oil washes out grease, overtightening can brinell bearings, and paint does not lubricate or protect internal surfaces. Greasing at the right intervals extends joint life and prevents costly driveline vibration.

117. D — A low warning is verified with a gauge at cold temperature, and the valve stem, core, and sensor are inspected for leaks, since a looks-normal tire can be several kilopascals low. Ignoring the sensor risks a failure, inflating to maximum without checking is wrong, and replacing the module is premature.

118. C — High-voltage battery cooling circuits can require a particular coolant, sometimes with low electrical conductivity, so only the type the manufacturer specifies is used to avoid corrosion or leakage paths. Generic antifreeze, tap water, or coolant picked by colour can damage the system or reduce electrical isolation. Check the maker's coolant specification before every refill.

119. A — Paraffin wax forms in diesel when the temperature falls below the fuel's cloud point and plugs filters. The remedy is to warm the system, replace the filter, and use winter blend or anti-gel treatment with a fuel heater. Oil in fuel is harmful, removing filters ruins injectors, and higher pressure cannot pass wax through the media.

120. D — Electrical power equals voltage multiplied by current, so 12.8 volts times 25 amps gives 320 watts. A tenfold error would produce 32 watts, 512 watts results from dividing in the wrong place, and 2.0 watts comes from dividing voltage by current. The result matters when sizing wire and alternator capacity for emergency equipment.

121. B — A motor that runs normally with the arms disconnected but stalls with them connected shows extra load from binding linkage or seized pivots, so these are cleaned, lubricated, or replaced. The battery, washer pump, and headlamp switch would not produce this pattern of normal unloaded operation and loaded stalling. Freeing the linkage restores normal wiper speed.

122. A — A carbon-restricted discharge line limits compressor output and raises temperature, so it must be replaced and the compressor checked for oil passing and excessive heat. Cleaning the outside is pointless, a smaller governor does not unblock the line, and belt tension does not change a physical restriction. Fresh hardware then restores normal build-up time.

123. C — A groove in the yoke's seal land will make a new seal leak again, so the yoke must be replaced or sleeved, and the pinion nut and bearing preload are checked during reassembly. External sealant does not seal a rotating shaft, and overfilling the axle forces oil past the seal.

124. B — An overheated hub with free brakes points to the bearing, usually from an adjustment that is too tight or lubricant that is low, producing friction and discoloured bearings. Under-inflation affects tire temperature, and a battery or shock absorber has no direct heat path into the wheel bearings. Correct adjustment and lubricant level prevent overheating.

125. A — Measured EGR flow when the command is zero shows the valve is not closing, so exhaust gas keeps entering the intake and reduces oxygen, causing rough idle and power loss at low load. A stuck wastegate affects boost, DEF problems affect the SCR system, and one seized injector would not explain high measured EGR flow.

126. C — Refrigerant systems rely on a specific compressor oil, commonly PAG for R-134a, in the quantity the maker specifies, and the wrong type or amount can harm the compressor or reduce cooling. Engine oil does not mix properly, guessing the amount is unreliable, and new compressors often need the oil level adjusted.

127. D — A ground fault circuit interrupter trips when it senses leakage current to ground, and wet or damaged connections at the inlet or cord are a common cause. A charger voltage setting or 12 volt accessory count does not create ground leakage on the 120 volt supply, and the alternator is on a separate circuit.

128. C — A journeyperson mentors by correcting unsafe behaviour calmly, explaining why chocks back up the brakes, and having the apprentice do it correctly. Letting it pass teaches that shortcuts are acceptable, taking over removes the learning, and escalating first skips coaching. Parking brakes can fail or be released during service. Calm coaching builds lasting safe habits.

129. D — Frost builds up when the defrost cycle does not run or does not finish, so the timer or controller, the termination sensor, and the heating circuit are checked. Fuel level, a door latch, or engine oil level do not control the defrost cycle and are not related to frost on the evaporator.

130. A — Force equals pressure times piston area: area is π divided by four times 0.08 metres squared, about 0.005027 square metres, and multiplying by 12 megapascals gives about 60.3 kilonewtons.

Forgetting the pi over four factor gives 76.8, halving the diameter incorrectly gives 15.1, and doubling gives 120.6. Checking the units confirms the answer.

131. B — Dual air systems use separate circuits so a loss in one leaves the other able to apply its brakes, though braking is reduced and a warning sounds. A shared tank would defeat the design purpose, the spring brakes apply only when pressure falls far lower, and ABS does not have its own air supply.

132. D — An inter-axle lock couples the axles to work together for traction on slippery surfaces, and on dry pavement it forces them to turn at the same speed, which causes scrub and windup in turns. The lock should be disengaged on good surfaces, and it does affect tire wear through binding.

133. C — Play measured at the knuckle with the axle raised points to worn kingpins, bushings, or thrust bearings, which allow wander and uneven tire wear, so they are measured against the maker's limit and replaced. Control arms are not part of a solid steer axle, and tire pressure or an air line cannot produce vertical movement.

134. A — Crankcase blow-by gases must be vented, and when the ventilation filter plugs, pressure builds in the crankcase and forces oil past seals, gaskets, and the dipstick tube. A restricted vent raises pressure, not lowers it, and it does not raise oil pump pressure or change oil cooling in any helpful way.

135. B — Corrosion adds resistance and must be removed after disconnecting the cables, then neutralized with a baking soda solution, cleaned, tightened, and coated with a protectant. Cleaning while connected risks a short, leaving deposits on the battery top can create a leakage path, and replacing the cable alone does not remove the corrosion.