PRACTICE EXAM 6: ASE T4 BRAKES SIMULATION

1. A driver reports that during a recent cold-weather trip, the brakes felt sluggish on the first few applications after overnight parking. After warming up, the issue resolved. The MOST likely root cause is:

A. Excessive wheel bearing endplay on the drive axle

B. Worn brake shoe return springs

C. Ice formation in the air lines or moisture contamination from a failing air dryer

D. A failing ABS ECU intermittently resetting

2. An ABS warning lamp illuminates solid yellow on the dashboard of a Class 8 tractor during normal highway driving. The driver has not experienced any braking complaint. The technician's FIRST step should be:

A. Connect a scan tool and retrieve stored diagnostic fault codes from the ABS ECU

B. Replace all four wheel speed sensors preventively

C. Replace the ABS ECU with a new unit

D. Disregard the warning because braking function is normal

3. A pressure protection valve has an opening pressure of 70 psi and a closing pressure of 55 psi. The tractor's supply system pressure drops from normal operating pressure to 60 psi. The valve is currently:

A. Open because pressure exceeds the closing threshold

B. Closed because pressure is below the opening pressure

C. Cycling between open and closed every few seconds

D. Open because once opened, it remains open until pressure drops below the closing pressure

4. Two technicians discuss an intermittent brake drag issue on a Class 5 medium-duty truck. Technician A says the most likely cause is an ABS modulator valve cycling incorrectly during normal driving. Technician B says a blocked master cylinder compensation port preventing fluid return is a likely cause. Who is correct?

A. Technician A only

B. Technician B only

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

5. A new brake rotor is being installed on a Class 6 truck. Before installing the new rotor, the technician should:

A. Torque the wheel studs to specification

B. Apply anti-seize compound liberally to the rotor hat

C. Measure the rotor's thickness against the minimum specification stamped on the rotor

D. Install the new pads first without verifying rotor thickness

6. During a pre-trip inspection, the driver cannot release the trailer spring brakes despite normal tractor air pressure and the red dash valve pushed in. The technician should FIRST:

A. Check that the trailer reservoir is charging by verifying supply air pressure at the red gladhand

B. Replace the trailer relay emergency valve

C. Bleed the trailer brake reservoir to zero

D. Cage the trailer spring brakes to move the vehicle

7. The air dryer's desiccant cartridge has a typical service life of approximately:

A. 6 months or 10,000 miles

B. 1 year or 50,000 miles

C. 18 months or 100,000 miles

D. 3 years or 300,000 miles

8. Which of the following is NOT a correct procedure for wheel bearing service?

A. Replace bearings as cup-and-cone matched sets

B. Use compressed air to spin the bearing for visual inspection of rotation

C. Pack new grease fully into the bearing using the palm method

D. Measure endplay with a dial indicator after final adjustment

9. A driver reports that during panic stops, the vehicle pulls sharply to the right, but during normal stops the pull is not noticeable. The MOST likely cause is:

A. Excessive system pressure at the air compressor

B. Low air pressure in the rear tires

C. Contaminated friction material on the left front wheel creating imbalance only under high load

D. A failed parking brake release on the rear drive axle

10. The total resistance of two wheel speed sensors wired in parallel, each measuring 1,800 ohms, is approximately:

A. 900 ohms

B. 3,600 ohms

C. 1,800 ohms

D. 600 ohms

11. A Class 8 tractor is equipped with spring brake chambers on the drive axle. After extended overnight storage in sub-zero conditions, the driver finds the parking brake applied but cannot build air pressure to release it. The MOST likely cause is:

A. A failed compressor drive belt

B. Ice in the fuel system preventing engine startup

C. A ruptured spring brake chamber diaphragm

D. Frozen moisture blocking air supply lines or valve function

12. A technician discovers that the air system on a heavy truck builds pressure from 85 psi to 100 psi in approximately 75 seconds. This buildup time is:

A. Well within FMVSS 121 specifications

B. Longer than the FMVSS 121 requirement of approximately 45 seconds

C. Normal only for cold-weather operation

D. Acceptable if the truck has a larger-than-standard reservoir

13. The primary function of the hub's transparent sight glass on an oil-bath hub is to:

A. Monitor the rotation speed of the wheel

B. Enable the operator to check tire pressure quickly

C. Allow visual verification of oil level during pre-trip inspection

D. Protect the lubricant from ultraviolet light degradation

14. A driver reports that the brake pedal feels excessively stiff with normal pedal travel, and braking performance seems reduced. The vehicle has a hydro-boost system. The LEAST likely cause is:

A. Failed power steering pump output

B. Internal hydro-boost unit seal leak

C. Nitrogen accumulator completely discharged

D. ABS wheel speed sensor with excessive air gap at one wheel

15. A typical heavy-truck brake chamber's service section diaphragm is made of:

A. Reinforced rubber with fabric layers for strength and flexibility

B. Solid metal with a flexible coating

C. A plastic polymer designed for single-use

D. Ceramic composite for high-temperature service

16. When the driver applies the brake pedal on a hydraulic-braked medium-duty truck, the primary piston of the master cylinder:

A. Holds static pressure indefinitely without mechanical support

B. Is hydraulically driven by the wheel cylinders

C. Retracts from the pushrod without engaging compensation ports

D. Moves forward past the compensation port, sealing it and generating hydraulic pressure

17. A CVSA Level I inspection discovers that one brake on a combination vehicle has an applied stroke exceeding the readjustment limit. On a 10-brake combination, this single defective brake represents:

A. 5% of total brakes — no out-of-service action required

B. 10% of total brakes — no out-of-service action required on its own

C. 20% of total brakes — triggers out-of-service

D. 25% of total brakes — triggers out-of-service

18. A technician is inspecting a tractor's air system and finds oil film throughout the supply reservoir, lines, and relay valves. The MOST likely cause is:

A. Normal aging of rubber components in the system

B. Excessive ambient humidity during operation

C. Worn compressor piston rings allowing engine oil blowby into the supply

D. Contamination from a failed trailer supply gladhand

19. A driver reports that the parking brake will not apply when the yellow valve is pulled. System pressure is normal and the yellow valve was recently replaced. The NEXT diagnostic step should be:

A. Verify that air is actually exhausting from the control ports of the spring brake chambers

B. Replace the spring brake chambers immediately

C. Replace the red dash valve preventively

D. Remove the caging bolts from all spring brake chambers

20. The minimum brake shoe lining thickness specification on a heavy-truck drum brake is typically:

A. 1/2 inch above the shoe table

B. 1 inch above the rivet heads

C. 3/4 inch for both bonded and riveted linings

D. 1/4 inch over the shoe table (bonded) or over the rivet heads (riveted)

21. A heavy-truck driver reports that during a recent hard braking event, the truck stopped shorter than expected but the pedal feels slightly different afterward. Pedal feel returns to normal after several applications. The MOST likely explanation is:

A. The master cylinder has internal damage requiring replacement

B. The ABS activated during the hard stop, causing momentary pedal pulsation that recovered with normal driving

C. Air has entered the hydraulic lines during the hard stop

D. The parking brake activated automatically at high deceleration

22. On a tractor-trailer combination, which of the following components serves as a signal amplifier, receiving a small control signal from the tractor and delivering high-volume air flow to the trailer chambers?

A. Tractor protection valve

B. Double-check valve at the spring brake circuit

C. Trailer relay emergency valve

D. Supply reservoir on the trailer

23. A Class 8 tractor equipped with ABS experiences loss of the warning lamp function — the lamp does not illuminate during the ignition self-test. This condition:

A. Is itself a fault that must be diagnosed and repaired

B. Indicates the ABS is functioning correctly with no faults to report

C. Is a normal condition on vehicles with ABS disabled manually

D. Only applies to trailer ABS systems, not tractor systems

24. The LEAST likely cause of a sudden audible hiss at a brake chamber during brake application is:

A. A torn service chamber diaphragm

B. A cracked air line connection at the chamber

C. A damaged pushrod boot allowing air escape

D. A functioning chamber return spring after normal pedal release

25. A technician is diagnosing a complaint of "brakes pull hard to the left" on a Class 6 medium-duty truck with hydraulic front disc brakes. Temperature readings after a road test show 220°F on the left front rotor and 140°F on the right front rotor. The diagnosis points to:

A. The right front brake is doing more work than the left

B. The left front brake is doing more work than the right

C. Both brakes are functioning normally

D. A failed master cylinder with internal bypass

26. The primary function of the air brake system's check valves between the supply reservoir and the primary/secondary reservoirs is to:

A. Regulate compressor cut-in pressure

B. Modulate ABS pressure during activation

C. Prevent air from the primary or secondary sides flowing back through the supply side if a leak develops

D. Prevent the trailer from draining tractor air during normal operation

27. A driver reports pedal pulsation during braking on a truck equipped with air disc brakes on both front and rear axles. No ABS faults are stored. The MOST likely cause is:

A. Uneven pad wear or rotor thickness variation on one or more wheels

B. Air in the hydraulic brake fluid

C. A failed compressor producing inconsistent pressure output

D. Blocked master cylinder compensation ports

28. A heavy-truck air system includes a supply reservoir, primary reservoir, and secondary reservoir. Each reservoir typically has a:

A. Pressurized air outlet to the ABS ECU directly

B. Low-pressure warning switch wired to the warning lamp only on the primary reservoir

C. Mechanical pressure gauge visible from the driver's seat

D. Manual drain valve for removing accumulated moisture

29. A Class 5 truck uses a belt-driven vacuum pump to supply the brake booster with vacuum. The belt has slipped slightly, reducing pump output. The MOST likely symptom is:

A. Activation of the ABS warning lamp

B. Hard brake pedal with reduced power assist force

C. Contaminated brake fluid in the reservoir

D. Leaking fluid at the master cylinder rear seal

30. During hydraulic brake bleeding, the master cylinder reservoir runs dry due to technician oversight. The consequence is:

A. No impact — the remaining fluid in the circuit is sufficient to complete bleeding

B. The ABS system will automatically refill the reservoir

C. The vehicle can be returned to service with a smaller-than-normal reservoir level

D. Air enters the master cylinder and the entire bleeding procedure must be restarted

31. The primary safety reason for installing wheel chocks before performing wheel-end service on a heavy truck is to:

A. Prevent the wheel from rotating during inspection

B. Secure the vehicle against theft

C. Prevent vehicle movement if the parking brake is released or fails

D. Comply with FMCSA record-keeping requirements

32. A heavy-truck driver complains of "brake grab" during light application — the brakes bite more firmly than expected for the pedal input. On a hydraulic system, this is MOST likely caused by:

A. Contaminated or glazed brake linings

B. Air in the hydraulic lines

C. A collapsed flex hose at one wheel

D. Over-adjusted wheel bearings causing drag

33. The LEAST likely root cause of a spring brake chamber failing to release even with full system pressure and control air reaching the chamber is:

A. A broken power spring inside the parking section

B. A seized internal piston in the parking section

C. Corroded chamber bolts preventing spring movement

D. A stuck-open air dryer purge valve

34. A technician is installing a new slack adjuster and adjusting pushrod stroke. The final specification is:

A. The stroke exceeds the readjustment limit by 1/4 inch for safety

B. The applied stroke is within the manufacturer's specification for the chamber type at 90 psi

C. The pushrod contacts the slack adjuster at less than 60 degrees for best mechanical advantage

D. Stroke is measured only at governor cut-out pressure

35. A parking brake is applied for storage purposes on a Class 8 tractor. The driver returns 48 hours later to find the parking brake has partially released and the vehicle has rolled slightly against the chocks. The MOST likely cause is:

A. Failed wheel bearings on the drive axle

B. Tractor protection valve stuck in closed position

C. An internal air leak in the spring brake chamber that allowed air to bleed into the parking section

D. Engine coolant temperature affecting spring pressure

36. A brake fluid tester reads 5.8% moisture content. This result indicates:

A. The fluid must be replaced immediately; it has significantly degraded

B. The fluid is within acceptable operating specifications

C. The moisture level is typical and does not affect performance

D. The tester is malfunctioning because readings cannot exceed 3%

37. A heavy truck's air compressor is running continuously, and system pressure has risen to approximately 165 psi — well above cut-out. The driver reports a loud, continuous hissing from an air system safety relief valve. The MOST likely root cause is:

A. A failed air dryer purge valve

B. A failed governor that is not signaling the compressor to unload

C. An undersized supply reservoir

D. Excessive ABS cycling during straight-line driving

38. The internal hydraulic control unit (HCU) of a modern hydraulic ABS system typically contains:

A. A vacuum reservoir for booster assist

B. The engine control module for integrated operation

C. Mechanical pedal ratio adjustment

D. Modulator solenoid valves, fluid accumulator, and an electric return pump

39. A technician reviewing a post-service road test finds that the drum temperatures at the two rear wheels differ by approximately 25°F. This is:

A. An indication of immediate foundation brake failure

B. Grounds for out-of-service citation

C. Within normal variation for sides after braking

D. A sign of incorrect wheel bearing adjustment

40. A 24-foot trailer has 4 axles and 8 brakes total. On CVSA inspection, 3 brakes are found out-of-adjustment. The percentage of defective brakes and the OOS status are:

A. 15% defective — not placed out of service

B. 37.5% defective — placed out of service

C. 20% defective — placed out of service

D. 30% defective — placed out of service

41. A driver reports that the ABS lamp flashes briefly and then goes out each time the vehicle is accelerated from a stop on a wet surface. This pattern is consistent with:

A. Automatic Traction Control (ATC) activating and indicating active intervention

B. A failed ABS modulator valve at the drive axle

C. Contaminated wheel speed sensor at the front axle

D. A complete ABS system failure requiring immediate replacement

42. The MOST likely cause of a brake chamber pushrod being unable to fully extend during brake application is:

A. Excessive lining wear causing the pushrod to bottom out

B. Over-pressurized supply reservoir

C. Inadequate return spring tension

D. A mechanical obstruction at the slack adjuster or a failed chamber internal component

43. A driver reports that the trailer brakes have a distinct "leading edge" feel — the trailer brakes apply before the tractor brakes even with the standard service application. This behavior is:

A. Evidence of a failed tractor protection valve

B. A sign of excessive service gladhand seal wear

C. Normal behavior on vehicles with a trailer brake hand (trolley) valve engaged during service application

D. A symptom of air in the trailer reservoir

44. When a spring brake chamber's internal service diaphragm tears but the parking (spring) section remains intact, the driver will notice:

A. Complete loss of both service and parking brake capability at that wheel

B. Loss of service brake at that wheel with parking brake still functioning through the spring section

C. Loss of parking brake only

D. No noticeable difference because both functions share the same diaphragm

45. The MOST reliable method to locate an air leak during a static leakage test is to:

A. Apply a soap solution at suspect joints and observe bubble formation with the system pressurized

B. Listen only from the driver's seat for 10 minutes

C. Drain the system and begin disassembling components systematically

D. Check the computer fault codes for leak diagnostics

46. Two technicians discuss the tractor protection valve. Technician A says the TPV protects the trailer from tractor pressure surges. Technician B says the TPV isolates the trailer from the tractor if the red dash valve is pushed in. Who is correct?

A. Technician A only

B. Technician B only

C. Neither Technician A nor Technician B

D. Both Technician A and Technician B

47. A new disc brake caliper is installed on a Class 6 truck. During bleeding, no fluid flows from the bleeder screw despite pedal pumping. The MOST likely cause is:

A. The bleeder is tightened instead of opened

B. The caliper has an internal blockage or was installed without being pre-bled

C. The master cylinder is overfilled

D. The pedal linkage is disconnected

48. An ABS ECU receives wheel speed sensor data indicating one wheel is decelerating significantly faster than the other three. The ECU's response is to:

A. Shut off the engine to prevent further movement

B. Apply the parking brake immediately

C. Release pressure at the modulator for the affected wheel, allowing the wheel to recover rotation

D. Disable ABS for the entire vehicle until the next ignition cycle

49. A Class 6 truck has experienced a sudden loss of power steering pressure during driving. On a hydro-boost-equipped brake system, the driver will immediately notice:

A. Activation of the ABS warning lamp

B. Heavy steering AND reduced brake assist force — hard pedal

C. Low brake fluid level in the reservoir

D. Immediate parking brake engagement at highway speed

50. A heavy-truck air brake system experiences excessive water in the reservoirs despite a functional compressor and normal drain intervals. The MOST likely root cause is:

A. A failed or saturated air dryer allowing moisture to pass through to downstream components

B. Excessive compressor cut-out pressure

C. ABS modulator valves cycling incorrectly

D. A failed pressure protection valve

PRACTICE EXAM 6 — ANSWER KEY AND EXPLANATIONS

1. C — Ice formation in the air lines or moisture contamination from a failing air dryer. In cold weather, moisture that has accumulated due to a compromised air dryer can freeze inside air lines and valve bodies, producing sluggish or delayed brake response on the first applications. As the vehicle warms during operation, the ice melts and normal function returns, pointing directly to the air dryer as the root cause.

2. A — Connect a scan tool and retrieve stored diagnostic fault codes from the ABS ECU. ABS diagnosis always begins with scan tool fault code retrieval because the ECU has already identified the specific circuit or component that triggered the warning. Starting with fault codes eliminates the majority of possible causes before any physical testing or component replacement is performed.

3. D — Open because once opened, it remains open until pressure drops below the closing pressure. Pressure protection valves have separate opening (70 psi) and closing (55 psi) thresholds, creating hysteresis. Once the valve opens at 70 psi, it remains open even as pressure falls, until pressure drops below the 55 psi closing threshold. At 60 psi on the falling side, the valve is still open.

4. B — Technician B only. Technician A is wrong because ABS modulator valves cycle only during active ABS events, not during normal driving. Technician B is correct — a blocked master cylinder compensation port prevents fluid return to the reservoir during release, trapping pressure in the circuit and producing intermittent or continuous brake drag.

5. C — Measure the rotor's thickness against the minimum specification stamped on the rotor. Before installing any new rotor, the technician must verify it meets specification by measuring thickness against the minimum value stamped on the rotor hub. Installing a rotor below minimum thickness compromises thermal capacity and structural integrity and is a safety-critical check.

6. A — Check that the trailer reservoir is charging by verifying supply air pressure at the red gladhand. The first diagnostic step is to confirm whether supply air is actually reaching the trailer. If pressure is present at the red gladhand, the fault is on the trailer side; if absent, the fault is on the tractor or the coupling. This test-before-replace approach prevents unnecessary parts replacement.

7. D — 3 years or 300,000 miles. The standard service life for an air dryer desiccant cartridge is approximately 3 years or 300,000 miles under normal operating conditions. Heavy-duty

applications and severe-service vehicles may require more frequent replacement, but this interval is the baseline reference for most highway tractors.

8. B — Use compressed air to spin the bearing for visual inspection of rotation. Never use compressed air to spin a dry bearing. Blowing air into a dry bearing can accelerate the rollers fast enough to disintegrate the cage and launch rollers at hazardous velocity. Bearing inspection must be done with the bearing held stationary, not spinning under forced air.

9. C — Contaminated friction material on the left front wheel creating imbalance only under high load. Contamination reduces the coefficient of friction at that wheel, producing normal braking at light applications but pronounced imbalance during hard stops when maximum friction would be required. The vehicle pulls away from the weak side (left) and toward the stronger side (right).

10. A — 900 ohms. Parallel resistance follows the formula: for two equal resistors, the total resistance is half the individual value. Two 1,800-ohm sensors in parallel produce approximately 900 ohms total. This calculation is useful when diagnosing ABS circuit integrity with a multimeter.

11. D — Frozen moisture blocking air supply lines or valve function. In sub-zero conditions, accumulated moisture in the air system can freeze, blocking the supply lines feeding the spring brake control ports. Without air reaching the parking section, the spring brakes cannot release. This is why air dryer health is particularly critical in cold-climate operations.

12. B — Longer than the FMVSS 121 requirement of approximately 45 seconds. FMVSS 121 specifies the system must build from 85 psi to 100 psi within approximately 45 seconds. A 75-second buildup time indicates either significant system leakage or compressor wear, and must be corrected before the vehicle returns to service.

13. C — Allow visual verification of oil level during pre-trip inspection. The transparent sight glass enables the driver to visually verify oil level in the hub during pre-trip inspection against "Full" and "Add" marks. Below-level oil indicates leakage that must be investigated, and milky or opaque oil indicates contamination requiring immediate service.

14. D — ABS wheel speed sensor with excessive air gap at one wheel. Excessive air gap at one wheel speed sensor affects ABS function but has no effect on pedal stiffness or braking power assist. The other three options all directly affect the hydro-boost assist function — pump failure, internal leak, and dead accumulator all produce reduced assist force.

15. A — Reinforced rubber with fabric layers for strength and flexibility. The chamber's service diaphragm is a reinforced rubber disc with embedded fabric layers that provide both the strength needed to resist high cyclic pressure and the flexibility needed to move with pushrod travel. This construction balances durability against the millions of cycles the diaphragm sees over the chamber's service life.

16. D — Moves forward past the compensation port, sealing it and generating hydraulic pressure. When the driver applies the pedal, the primary piston moves forward until its seal passes the

compensation port, isolating the circuit from the reservoir. Further piston movement compresses the fluid in the circuit, generating the hydraulic pressure that propagates to the wheel ends.

17. B — 10% of total brakes — no out-of-service action required on its own. One defective brake out of ten is 10%, which is below the 20% threshold for CVSA out-of-service status. The vehicle would receive a citation for the defective brake and be required to correct it at next PM, but can continue on its current trip.

18. C — Worn compressor piston rings allowing engine oil blowby into the supply. Oil film throughout the supply-side components indicates engine oil is passing worn compressor piston rings and entering the discharge air stream. The oil then carries through the air dryer and into downstream components. This is a signature diagnostic for internal compressor wear.

19. A — Verify that air is actually exhausting from the control ports of the spring brake chambers. The first diagnostic step is to confirm whether air is exhausting as the yellow valve commands. If air exhausts properly but the brakes still don't apply, the fault is at the chambers. If air doesn't exhaust, the fault is in the valve, lines, or routing — and replacing a newly installed valve is rarely the answer.

20. D — 1/4 inch over the shoe table (bonded) or over the rivet heads (riveted). FMCSA and industry standard specifies approximately 1/4 inch of remaining friction material as the minimum replacement threshold for heavy-truck drum brake shoes. This applies to both bonded linings (measured over the shoe table) and riveted linings (measured over the rivet heads).

21. B — The ABS activated during the hard stop, causing momentary pedal pulsation that recovered with normal driving. ABS activation during a hard stop produces characteristic pedal pulsation from the modulator cycle, and the pedal may feel slightly different immediately afterward. Pedal feel returning to normal after several applications confirms no fault was stored — the system operated as designed.

22. C — Trailer relay emergency valve. The trailer relay emergency valve receives the small-volume signal from the tractor through the blue gladhand and uses it to deliver high-volume air from the trailer's own reservoir to the trailer chambers. This amplification function dramatically reduces trailer brake response time compared to routing all service air through the long service line.

23. A — Is itself a fault that must be diagnosed and repaired. Failure of the ABS warning lamp to illuminate during the ignition self-test is a fault condition in itself. FMVSS 121 requires the warning lamp to perform a self-test at each ignition cycle, and a non-functional lamp means the driver would not be alerted to an actual ABS fault — a safety-critical issue requiring repair.

24. D — A functioning chamber return spring after normal pedal release. A normally functioning return spring retracts the pushrod after release without producing an air leak — the sound associated with it is the quiet exhaust through the chamber's normal pathway. The other three options all directly produce an audible hiss at the chamber during application.

25. B — The left front brake is doing more work than the right. A significantly higher temperature on one side indicates that wheel is absorbing more braking energy. A 220°F left reading versus 140°F right reading means the left front is doing more braking work, explaining the pull to that side. The right brake may have a hydraulic restriction, seized caliper, or contaminated friction.

26. C — Prevent air from the primary or secondary sides flowing back through the supply side if a leak develops. The check valves enforce the circuit independence required by FMVSS 121's dual-circuit mandate. If one circuit loses air due to a leak, the check valve prevents that loss from draining the supply or the other service reservoir, preserving braking capability on the remaining circuit.

27. A — Uneven pad wear or rotor thickness variation on one or more wheels. Pedal pulsation on air disc brakes most commonly points to rotor thickness variation or uneven pad wear at one or more wheels. Rotor thickness variation around the circumference causes the caliper pistons to alternately press harder and softer, producing the characteristic pulsation felt at the pedal.

28. D — Manual drain valve for removing accumulated moisture. Every reservoir on a heavy truck has a manual drain valve at its lowest point for removing accumulated moisture and oil residue. Routine drainage is part of preventive maintenance and reveals important diagnostic information about the air dryer's condition through the quantity and condition of fluid removed.

29. B — Hard brake pedal with reduced power assist force. Reduced vacuum pump output means the booster cannot generate the full pressure differential needed for assist. The result is a pedal that feels stiffer and requires more driver effort to achieve the same braking force — the classic signature of inadequate vacuum supply to the booster.

30. D — Air enters the master cylinder and the entire bleeding procedure must be restarted. Once the reservoir runs dry, air is drawn into the master cylinder through the compensation ports. This trapped air must then be purged through the entire wheel cylinder bleeding sequence, effectively restarting the procedure and wasting all prior work. Keeping the reservoir topped up is a universal bleeding rule.

31. C — Prevent vehicle movement if the parking brake is released or fails. Wheel chocks provide mechanical redundancy that protects the technician if the parking brake is released or fails during service. This is a core safety practice before any wheel-end service on a heavy truck and should be done consistently regardless of how brief the service operation is expected to be.

32. A — Contaminated or glazed brake linings. Contaminated linings (from oil, grease, or brake fluid saturation) or glazed linings (from overheating that creates a hard, shiny surface) often produce grabby application behavior. The friction coefficient is high at the contact point, but inconsistent — producing the "grab" sensation the driver reports.

33. D — A stuck-open air dryer purge valve. A stuck-open purge valve affects the compressor's ability to rebuild pressure but has no direct effect on whether individual spring brake chambers release.

The other three options directly address the spring brake chamber's inability to release even with adequate air pressure supplied to its control port.

34. B — The applied stroke is within the manufacturer's specification for the chamber type at 90 psi. After installing a slack adjuster, the technician verifies applied stroke is within the specification for the chamber type (for example, 1-3/4 inches for a Type 20 standard). This stroke measurement at 90 psi is the definitive test for proper adjustment.

35. C — An internal air leak in the spring brake chamber that allowed air to bleed into the parking section. An internal leak within the spring brake chamber can allow air to gradually flow from somewhere into the parking section (the side holding the power spring compressed), gradually releasing the parking brake over hours. This internal failure is rare but can cause exactly the described rolling-from-parking-position symptom.

36. A — The fluid must be replaced immediately; it has significantly degraded. Moisture content above 3% is generally considered the replacement threshold. A reading of 5.8% is almost double that — the fluid's wet boiling point has dropped significantly, and fade risk under hard braking is dramatically elevated. Immediate replacement is required.

37. B — A failed governor that is not signaling the compressor to unload. When system pressure rises well above cut-out (165 psi versus typical 120–135 psi), the governor has failed to signal unload. The safety relief valve at the supply reservoir has opened to vent excess pressure, producing the audible hiss and protecting downstream components from over-pressure damage.

38. D — Modulator solenoid valves, fluid accumulator, and an electric return pump. Hydraulic ABS HCUs integrate all modulator solenoid valves for every controlled wheel, a small internal fluid accumulator, and an electric return pump that pumps exhausted fluid back to the master cylinder reservoir during the reapply phase. This centralized architecture distinguishes hydraulic ABS from air ABS.

39. C — Within normal variation for sides after braking. A temperature differential under 50°F between sides is generally within normal variation, representing small differences in load distribution, tire condition, or braking input during the road test. Only differentials exceeding approximately 50 to 75°F indicate a real brake imbalance that requires investigation.

40. B — 37.5% defective — placed out of service. Three defective brakes out of eight total is 37.5%, well above the 20% threshold for out-of-service status. The trailer is placed out of service until the defects are corrected, and cannot be moved except to the nearest repair facility with inspector clearance.

41. A — Automatic Traction Control (ATC) activating and indicating active intervention. When ATC detects wheel spin during acceleration on wet pavement, it applies brake pressure at the spinning wheel and reduces engine torque. The ABS/ATC warning lamp flashes briefly to indicate active intervention — this is normal operation, not a fault condition.

42. D — A mechanical obstruction at the slack adjuster or a failed chamber internal component. Pushrod travel can be limited by a mechanical obstruction — such as a jammed slack adjuster, damaged camshaft, or internal chamber component interference. These cause incomplete application even with full air pressure at the chamber, and require mechanical inspection rather than further air system diagnosis.

43. C — Normal behavior on vehicles with a trailer brake hand (trolley) valve engaged during service application. The trailer brake hand valve applies the trailer brakes independently of the service pedal. When used, the trailer brakes may engage slightly before the tractor brakes — a normal operational technique used in certain towing or coupling scenarios, not a malfunction.

44. B — Loss of service brake at that wheel with parking brake still functioning through the spring section. The service and parking sections of a spring brake chamber operate independently through different diaphragms and mechanisms. A torn service diaphragm affects only service braking at that wheel, while the parking brake continues to function through the intact spring section.

45. A — Apply a soap solution at suspect joints and observe bubble formation with the system pressurized. Soap solution is the classic leak-detection technique. Applied to pressurized joints and fittings, it produces visible bubbles at any leak location. This low-cost, low-tech method reliably identifies the specific source of leakage and is the first step after a failed static leakage test.

46. C — Neither Technician A nor Technician B. Technician A is wrong because the TPV protects the tractor from trailer-side failures, not the reverse. Technician B is wrong because pushing the red dash valve in opens the TPV — pulling the valve closes it. Both technicians have the function inverted.

47. B — The caliper has an internal blockage or was installed without being pre-bled. A new caliper that produces no fluid flow during bleeding typically has an internal blockage — trapped air in the caliper body or the bleeder passage blocked by debris. Some calipers require manufacturer-recommended pre-bleed or positioning during installation to purge their internal air.

48. C — Release pressure at the modulator for the affected wheel, allowing the wheel to recover rotation. When the ECU detects a wheel decelerating faster than physically possible without lockup, it commands the modulator valve to exhaust chamber air pressure, releasing brake force at that wheel. This allows the wheel to recover rotation before the cycle moves through hold and reapply phases.

49. B — Heavy steering AND reduced brake assist force — hard pedal. On a hydro-boost-equipped vehicle, the power steering pump supplies pressure to both the steering gear and the brake booster. A loss of steering pressure simultaneously produces heavy steering and reduced brake assist, creating the coupled symptom that diagnostically points to the shared pressure source.

50. A — A failed or saturated air dryer allowing moisture to pass through to downstream components. When the air dryer is saturated, failed, or not regenerating properly, water vapor passes through to

the reservoirs and condenses into liquid water. The technician will find excessive moisture at reservoir drains despite the compressor and drain intervals being otherwise normal.