PRACTICE EXAM 18: ASE A5 BRAKES SIMULATION

Time Allowed: 90 Minutes **Total Questions:** 45 **Passing Score:** Approximately 70% (32/45) **Format:** Multiple Choice — Select the BEST answer

EXAM INSTRUCTIONS: Read each question carefully. Select the single best answer. Manage your time — approximately 2 minutes per question. Do not leave any question unanswered.

1. A customer reports that after a complete brake job, the brake pedal travels farther than expected before the vehicle begins to slow. The technician bled the system thoroughly and the pedal is firm at the bottom of its travel. The MOST likely cause is:

A. Air remaining in the ABS modulator unit

B. The brake pads were not fully seated against the rotors before returning the vehicle

C. The master cylinder was overfilled during the brake job

D. The caliper pistons were not fully retracted before installing new pads, leaving insufficient piston travel

2. A vehicle exhibits a low brake pedal that can be pumped up to normal height. After sitting for 30 minutes with no pedal pressure applied, the pedal returns to its normal firm position. The MOST likely cause is:

A. A master cylinder with a bypassing primary cup seal

B. A caliper piston that is slowly retracting too far due to a worn piston seal

C. Air in the hydraulic system near the master cylinder

D. A proportioning valve that is bleeding pressure back to the reservoir

3. A technician is inspecting a set of disc brake rotors. The inboard rotor surface on the left front is deeply grooved while the outboard surface is smooth. The MOST likely cause is:

A. A warped rotor causing uneven contact with both pad surfaces

B. The outboard brake pad has worn away completely, allowing metal-to-metal contact on the inboard side only

C. The caliper slide pins are seized, holding the caliper off-center and allowing only inboard pad contact

D. The inboard pad has separated from its backing plate, exposing the metal to the rotor

4. When inspecting a brake system, a technician finds the brake fluid in the reservoir is milky white in appearance. This indicates:

A. Normal aging of glycol-based brake fluid over time

B. Significant water contamination mixing with the brake fluid

C. DOT 5 silicone fluid was previously installed in a DOT 3 system

D. Air bubbles suspended in the fluid from an incomplete bleed

5. A vehicle with rear drum brakes produces a grinding noise from the rear that gets louder during braking and disappears when the brakes are released. The MOST likely cause is:

A. A worn rear wheel bearing

B. Brake shoes worn through the lining material causing metal-to-metal contact with the drum

C. A loose backing plate contacting the drum face during rotation

D. A broken hold-down spring allowing the shoe to contact the drum unevenly

6. Technician A says the primary piston in a tandem master cylinder is pushed directly by the brake booster pushrod and pressurizes the front brake circuit. Technician B says the secondary piston is pushed by pressure from the primary piston and operates independently with its own return spring. 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

7. A vehicle with a vacuum power brake booster has adequate vacuum at idle but the brake pedal becomes progressively harder during repeated stops in quick succession. The MOST likely cause is:

A. The vacuum check valve is functioning correctly and this is normal behavior

B. The vacuum reserve in the booster is being depleted faster than the engine can replenish it

C. The brake fluid is overheating and causing vapor lock in the lines

D. The master cylinder compensating ports are becoming blocked with heat-expanded fluid

8. During a brake inspection, a technician finds a small crack in the outer edge of a disc brake rotor that does not extend to the friction surface. The correct action is:

A. Monitor the crack at the next service interval since it has not reached the friction surface

B. Apply brake rotor repair epoxy to seal the crack and prevent propagation

C. Replace the rotor — any crack in a brake rotor is cause for immediate replacement

D. Machine the rotor to reduce its diameter until the crack is removed

9. A vehicle with ABS is being diagnosed for an ABS warning light. The scan tool shows a code for low voltage at the ABS control module. The technician checks the battery and charging system — both are within specification. The NEXT step is to:

A. Replace the ABS control module since internal voltage regulation has failed

B. Check the ABS module power supply and ground circuits for excessive resistance or corrosion

C. Clear the code and perform a test drive to see if the code returns

D. Inspect all four wheel speed sensors for damage since they draw power from the module

10. A technician notices that the brake pedal on a vehicle with an electric vacuum pump assisted booster is firm at startup but becomes progressively harder after the engine warms up. The MOST likely cause is:

A. The electric vacuum pump is not activating due to a faulty pressure switch

B. Thermal expansion of brake fluid reducing master cylinder reserve travel

C. The power booster diaphragm is softening with heat and losing its ability to hold vacuum

D. The engine vacuum drops at operating temperature due to a camshaft timing issue

11. A customer reports the vehicle drifts to the right during braking but tracks straight during normal driving with no brake application. A brake inspection finds all pads and shoes within specification. The MOST likely cause is:

A. A seized right front caliper slide pin preventing the right front caliper from releasing fully

B. Unequal tire inflation pressure creating different rolling resistance values side to side

C. A right rear wheel cylinder that is not developing full pressure

D. A stuck proportioning valve delivering unequal pressure left to right

12. When replacing brake lines, a double-flare connection is required. The first stage of a double flare:

A. Creates the final sealing surface against the fitting seat in one step

B. Forms a conical bell shape that is then folded back over itself in the second stage to create a double-thickness sealing surface

C. Expands the tube end outward to accept a compression fitting sleeve

D. Swages the tube end to reduce its diameter for a tighter fit in the fitting bore

13. A vehicle with four-wheel disc brakes has the rear pads wearing at twice the rate of the front pads. All calipers are releasing properly. The MOST likely cause is:

A. A proportioning valve that is stuck open, delivering excessive pressure to the rear circuit

B. Rear rotors that are undersized for the vehicle's weight, creating excessive heat

C. Incorrect rear pad compound installed with a higher friction coefficient than specified

D. A rear brake bias adjuster set incorrectly from a previous repair

14. When a brake caliper piston seal is described as a "square cut" seal, the unique function of this design is to:

A. Provide a stronger hydraulic seal than a lip seal design under high pressure

B. Retract the caliper piston a precise, consistent distance when hydraulic pressure is released

C. Prevent brake fluid from contacting the caliper piston boot during hard braking

D. Seal against both the piston and bore simultaneously to eliminate fluid bypass

15. A technician is performing a vacuum test on a brake booster. With the engine off and vacuum depleted, the technician applies firm pedal pressure and holds it for 30 seconds. The pedal slowly drops toward the floor. This indicates:

A. A normal result since vacuum has been depleted and fluid displacement occurs

B. The master cylinder has an internal bypass allowing fluid to pass the primary cup under sustained pressure

C. The vacuum booster diaphragm is leaking, allowing pedal movement under sustained load

D. The brake caliper pistons are retracting under sustained load due to worn seals

16. A vehicle with ABS and traction control has both the ABS and traction control warning lights illuminated. A scan tool retrieves a single wheel speed sensor fault on the left rear. Which statement is MOST accurate?

A. The traction control fault is unrelated and requires a separate diagnosis

B. Both systems share wheel speed sensor data, so a single sensor fault disables both systems simultaneously

C. The ABS fault triggered a secondary traction control fault code as a cascading error

D. The traction control module must be replaced since it cannot operate without its own dedicated sensors

17. A technician is replacing a master cylinder on a vehicle with ABS. After installation and bleeding, the pedal is firm but the ABS warning light is on. No codes were present before the repair. The MOST likely cause is:

A. Air in the ABS modulator introduced during the master cylinder replacement

B. The new master cylinder has a different pressure output than the original, confusing the ABS module

C. The ABS module lost its memory during the battery disconnect and requires reinitialization

D. The brake fluid level sensor in the new master cylinder reservoir is wired incorrectly

18. A vehicle with rear drum brakes has a parking brake that holds properly on a flat surface but releases on any incline. The cables and levers are in good condition and properly adjusted. The MOST likely cause is:

A. A weak parking brake cable return spring failing to fully disengage the mechanism

B. Glazed rear brake shoe linings with insufficient friction to generate holding force on a grade

C. An improperly adjusted star wheel adjuster leaving excessive shoe-to-drum clearance

D. A bent parking brake strut allowing the shoes to cant away from the drum

19. A customer complains of a vibration in the steering wheel during braking from highway speed that is not present during normal driving. The MOST likely cause is:

A. A worn front wheel bearing that loads up during brake application

B. Front rotor lateral runout or thickness variation causing pedal and steering wheel pulsation

C. A loose front caliper bracket bolt allowing caliper movement during braking

D. Unbalanced front tires that produce vibration under the additional load of braking

20. A technician finds the left rear brake hose has collapsed internally when the caliper bleeder screw is opened — pressure releases and the wheel turns freely, but closes again immediately when the bleeder is closed. This confirms:

A. The wheel cylinder has a stuck piston that only releases when system pressure drops

B. The caliper piston seal is holding residual pressure after brake release

C. The brake hose inner lining has deteriorated and is acting as a check valve, trapping pressure at the caliper

D. The proportioning valve is stuck closed, trapping pressure in the left rear circuit

21. A technician is installing a new set of drum brake shoes and notices the replacement shoes are slightly narrower than the originals. The correct action is:

A. Install the narrower shoes since minor dimensional differences are acceptable in drum brake applications

B. Verify the correct part number — installing incorrect-width shoes reduces braking effectiveness and can cause uneven wear

C. Grind the drum contact surface to match the narrower shoe width

D. Add shims behind the shoe web to compensate for the width difference

22. A vehicle has excessive brake pedal travel but a firm pedal at the bottom of its stroke. The master cylinder reservoir is full. The technician suspects excessive clearance somewhere in the system. Which component should be inspected FIRST on a rear drum brake vehicle?

A. Caliper slide pin bushings for wear

B. Rear brake self-adjusters for proper function and current adjustment

C. Master cylinder pushrod length for proper adjustment

D. Brake booster vacuum reserve for adequate assist

23. A technician is cleaning brake components with brake cleaner spray. Which of the following precautions is MOST important?

A. Applying brake cleaner only to cold components to prevent vapor ignition

B. Avoiding spraying brake cleaner directly onto rubber brake hoses or caliper boots

C. Using only aerosol brake cleaner, never bulk solvent, to maintain correct dilution

D. Wearing eye protection and ensuring adequate ventilation since brake cleaner vapors are hazardous

24. A vehicle with a diagonally split brake system has a brake line failure in the right front circuit. Which wheels retain braking capability?

A. Both front wheels through the secondary circuit

B. Left front and right rear through the intact diagonal circuit

C. Both rear wheels through the rear circuit check valve

D. Right rear and left rear through the rear axle circuit

25. During a drum brake reassembly, a technician accidentally installs the primary shoe in the secondary position and the secondary shoe in the primary position. Which symptom will this MOST likely produce?

A. No noticeable difference since both shoes contact the same drum surface

B. Significantly reduced braking effectiveness since the self-energizing action of the servo effect will be reversed

C. Immediate brake lockup due to excessive shoe-to-drum contact area

D. A brake pull toward the opposite side axle

26. A vehicle with electronic stability control (ESC) illuminates the ESC warning light during a routine road test on a straight, dry road with no driver steering input. The MOST likely cause is:

A. A faulty yaw rate sensor sending incorrect vehicle rotation data to the ESC module

B. Low tire pressure on one corner causing a wheel speed differential that triggers ESC intervention

C. An ABS solenoid fault that prevents ESC from controlling individual wheel braking

D. The ESC system activating normally due to road crown creating slight directional bias

27. A technician is replacing a front brake caliper on a vehicle with a unitized hub bearing assembly. After torquing all fasteners to specification, the technician notices the caliper is slightly cocked to one side and the inboard pad is not parallel to the rotor. The MOST likely cause is:

A. A bent caliper bracket that must be replaced

B. Debris or corrosion buildup on the caliper bracket mounting surface preventing flush seating

C. An incorrect replacement caliper with a slightly different piston offset than the original

D. The hub bearing assembly has excessive runout affecting caliper alignment

28. During an ABS brake bleed, the scan tool indicates the modulator solenoids have cycled and the technician has bled fluid from all four corners. The brake pedal still feels slightly spongy. The MOST likely remaining cause is:

A. The scan tool ABS bleed cycle was not completed the required number of times

B. Air trapped in the master cylinder bore due to insufficient bench bleeding before installation

C. A small air pocket remaining in the highest point of the brake line routing

D. The ABS wheel speed sensors are interfering with hydraulic pressure buildup

29. A customer reports the brake pedal feels normal under light braking but fades dramatically under repeated hard stops during spirited driving. Pedal feel returns to normal after a cool-down period. This symptom is MOST consistent with:

A. A master cylinder that overheats and loses volumetric efficiency

B. Brake pad thermal fade — the friction material overheating and temporarily losing its coefficient of friction

C. Vapor lock in the brake lines from fluid boiling near overheated calipers

D. A proportioning valve that changes its calibration threshold under sustained pressure

30. A technician measures the thickness of a disc brake rotor at eight equally spaced points around the rotor circumference. The measurements vary between 0.998 inches and 1.009 inches. This condition is called:

A. Lateral runout

B. Bell-mouthing

C. Thickness variation (parallelism)

D. Rotor taper

31. A vehicle with a full floating rear axle has a leaking axle seal. Which brake component is MOST at risk from this leak?

A. The rear brake caliper piston seal

B. The rear drum brake shoe lining

C. The rear brake line fitting at the wheel cylinder

D. The parking brake cable end fitting

32. A technician is performing a road test after a brake job and notices the vehicle requires more distance than expected to stop from 60 mph despite a firm pedal. All brake components were replaced with OEM-equivalent parts. The MOST likely cause is:

A. The brake pads have not yet been bedded in and are not at full friction capacity

B. The new rotors are too thick and are reducing caliper clamping efficiency

C. Brake fluid was not replaced and old fluid is reducing hydraulic output

D. The ABS system is activating prematurely due to new rotor surface variations

33. A technician is diagnosing a vehicle where the brake pedal slowly creeps down when held at a steady stop on an incline, but returns to normal height when released. Brake fluid level is normal. No external leaks are found. The MOST likely cause is:

A. A weak brake pedal return spring allowing gravity to pull the pedal down

B. An internal master cylinder leak allowing fluid to bypass the primary piston seal

C. Caliper pistons retracting under the sustained weight of the vehicle on the incline

D. A proportioning valve that bleeds pressure from the system during sustained application

34. When a technician applies the parking brake on a vehicle with rear disc brakes and a drum-in-hat parking brake design, which friction surfaces are engaged?

A. The rear disc brake pads clamp the rear rotors through mechanical cable actuation

B. Small brake shoes inside the rotor hat contact the inner drum surface machined into the rotor hat

C. A separate set of disc pads mounted inside the caliper engage a secondary rotor surface

D. The rear caliper pistons are mechanically driven against the main rotor by the parking cable

35. A vehicle has a hard brake pedal immediately after startup that improves after several brake applications. The vacuum booster and check valve test normal. The MOST likely cause is:

A. A frozen brake caliper piston that loosens with the heat of initial brake applications

B. Residual pressure in the system from the previous drive holding the pads against the rotors

C. Moisture condensation in the booster that evaporates during initial brake use

D. A slow-opening check valve allowing vacuum to build gradually in the booster after startup

36. A technician is replacing a brake master cylinder and finds the brake lines are difficult to remove due to corrosion on the inverted flare fittings. To avoid twisting and cracking the brake lines during removal, the BEST approach is:

A. Apply penetrating oil to the fittings and allow it to soak before attempting removal with a flare nut wrench

B. Use an open-end wrench for maximum torque leverage on the corroded fittings

C. Heat the fittings with a torch to expand the metal and free the threads

D. Cut the fittings off and install compression unions to reconnect the lines

37. A vehicle with a load-sensing proportioning valve has the rear brakes locking prematurely when the vehicle is lightly loaded but brakes balance correctly when fully loaded. This behavior indicates:

A. The load-sensing valve is malfunctioning and must be replaced

B. The load-sensing valve is functioning correctly — it is designed to reduce rear brake pressure when the suspension is unloaded

C. The rear brake shoes are incorrectly adjusted, requiring less pressure to apply when lightly loaded

D. The front brakes are under-performing, making the rear brakes appear to lock prematurely

38. A technician installs new front brake pads and notices the replacement pads have a higher friction coefficient rating than the originals. Which of the following is a potential concern with this installation?

A. Higher friction pads will generate less heat and may cause brake fade at lower temperatures

B. Higher friction pads may cause the front brakes to overpower the rear brakes during hard stops, increasing rear wheel lockup risk

C. The ABS system will not recognize the new pad compound and will require recalibration

D. Higher friction pads wear faster under light braking but last longer during heavy use

39. A vehicle's right rear caliper bleeder screw is rounded off and cannot be removed with a standard wrench. The BEST course of action is:

A. Drill out the bleeder screw and retap the caliper bore to the next larger thread size

B. Use a screw extractor set to remove the damaged bleeder screw without damaging the caliper

C. Leave the bleeder closed and bleed the system from the other three corners only

D. Replace the entire caliper assembly since the bleeder screw cannot be safely removed

40. A customer reports a single loud pop or clunk from the front end when the brake pedal is first pressed after the vehicle has been sitting overnight. The noise does not repeat during subsequent brake applications. The MOST likely cause is:

A. A worn front sway bar end link that shifts under initial brake load

B. Surface rust on the rotor face that breaks free during the first brake application

C. A brake pad that shifts in the caliper bracket due to loose anti-rattle hardware

D. A loose caliper mounting bolt that shifts under initial hydraulic pressure

41. A technician is diagnosing an intermittent ABS warning light on a vehicle with 120,000 miles. No current codes are stored but freeze frame data shows the code occurred at low speed in a parking lot. The MOST likely cause is:

A. The ABS control module is failing due to age and heat cycling

B. A wheel speed sensor with an intermittent open circuit that only appears at low wheel speeds

C. The ABS hydraulic modulator is sticking during low-pressure parking maneuvers

D. A tone ring with a single missing or damaged tooth causing a brief signal dropout at low speed

42. A technician finds rust jacking on the rear drum brake — a significant buildup of rust and corrosion between the brake shoe lining and the shoe table (web). This condition causes:

A. Reduced thermal transfer from the shoe lining to the drum

B. The lining to lift away from the shoe table, reducing contact area and causing cracking or separation

C. Accelerated drum wear due to abrasive rust particles between the shoe and drum

D. The hold-down springs to lose tension due to corrosion on the spring pins

43. A vehicle with a combined ABS and electronic brake force distribution system is being diagnosed after the driver reports the rear wheels locked during a hard stop on wet pavement. The ABS light is off and no codes are stored. The MOST likely cause is:

A. The ABS system correctly allowed rear wheel lockup since road conditions exceeded ABS capability

B. The EBD function has failed silently without setting a code, allowing unmodulated pressure to the rear circuit

C. The ABS threshold was exceeded on one axle while EBD continued functioning on the other

D. The rear brake shoes are glazed, causing sudden lockup that the ABS system could not prevent quickly enough

44. A technician is performing a brake inspection on a vehicle with 80,000 miles. The brake fluid has never been changed. The technician uses a test strip to check brake fluid condition. The strip indicates high copper content. This is significant because:

A. Copper contamination indicates petroleum products have entered the brake system

B. High copper content indicates the fluid's corrosion inhibitors have depleted, meaning the fluid is aggressively corroding internal brake system components

C. Copper from the brake lines is normal and does not affect fluid performance

D. High copper content raises the fluid's boiling point and reduces vapor lock risk

45. A technician completes a rear drum brake job including new shoes, hardware, and wheel cylinders. During the final road test, the rear brakes feel weak and require excessive pedal pressure. The front brakes feel normal. The MOST likely cause is:

A. The rear brake proportioning valve reduced pressure after detecting new shoe installation

B. The new wheel cylinder bore diameter is smaller than the original, reducing hydraulic output force

C. The brake shoes were not properly adjusted and have excessive clearance from the drum

D. New brake shoe linings require a longer bed-in period than disc brake pads

PRACTICE EXAM 18 — ANSWER KEY AND EXPLANATIONS

1. B — Pads not seated against rotors — After compressing caliper pistons to install new pads, the pistons sit deep in the bore. Until the pedal is pumped to push the pistons out and seat the pads against the rotors, the pedal will travel farther than normal before hydraulic resistance builds.

2. B — Caliper piston retracting too far — A worn or swollen caliper piston seal loses its ability to retract the piston precisely. The piston pulls back too far after release, requiring extra pedal travel to push it out again on the next application. After sitting, fluid temperature equalizes and the condition temporarily normalizes.

3. C — Seized slide pins holding caliper off-center — When slide pins are seized, the caliper cannot shift laterally on the bracket. This locks the caliper in a fixed position where only the inboard pad contacts the rotor consistently, causing deep grooves on the inboard surface while the outboard surface remains smooth.

4. B — Significant water contamination — Milky or cloudy white brake fluid indicates emulsification from substantial water contamination. This is far beyond normal moisture absorption and typically results from a compromised reservoir cap seal, a damaged reservoir, or introduction of water during service.

5. B — Shoes worn through lining to metal — A grinding noise that intensifies during brake application and disappears on release is the definitive symptom of metal-to-metal contact. The steel shoe table is grinding directly against the cast iron drum surface with each brake application.

6. C — Both technicians — The primary piston is directly connected to the booster pushrod and creates pressure in its circuit. The secondary piston operates independently on fluid pressure generated by the primary piston's forward movement and has its own return spring and cup seals. Both statements are correct.

7. B — Vacuum reserve depleting faster than replenishment — During repeated quick stops, each power assist stroke consumes vacuum from the booster reserve. If stops occur faster than engine vacuum can recharge the booster, pedal effort increases progressively until vacuum is restored during a pause in braking.

8. C — Replace the rotor — Any crack found in a brake rotor is grounds for immediate replacement regardless of location or apparent severity. Rotor cracks propagate unpredictably under thermal stress and hydraulic clamping loads. A cracked rotor can fail catastrophically during hard braking.

9. B — Check power supply and ground circuits — Before replacing an ABS module for a voltage code, always verify the module is actually receiving correct voltage and has a clean ground path.

Corroded connectors, high-resistance grounds, and chafed wiring are far more common than internal module voltage regulator failure.

10. A — Electric vacuum pump not activating — An electric vacuum pump relies on a pressure switch to activate when booster vacuum drops below a threshold. A faulty pressure switch that stops commanding the pump after warmup allows vacuum to deplete progressively, causing increasing pedal hardness as the engine warms.

11. A — Seized right front caliper slide pin — A brake pull that only occurs during braking on a vehicle that tracks straight otherwise is a classic slide pin seizure symptom. The seized pin prevents the caliper from fully releasing after the stop, maintaining residual drag that pulls toward the dragging side during the next application.

12. B — Bell shape folded back over itself — A double flare is a two-stage process. The first stage creates a bell or tulip shape by expanding the tube end outward. The second stage folds this bell back over itself, creating a double-thickness rolled edge that seals against the fitting seat and resists cracking from vibration.

13. A — Proportioning valve stuck open — When rear pads wear at double the rate of fronts with normal caliper function, the rear circuit is receiving disproportionately high pressure. A proportioning valve stuck in the open position passes full master cylinder pressure to the rear brakes without the designed pressure reduction.

14. B — Retract piston a precise distance — The square cut piston seal is designed with a slight interference fit in its groove. When hydraulic pressure is applied, the seal distorts slightly. When pressure releases, the seal's elasticity returns it to its original shape, pulling the piston back a small, consistent distance to create running clearance between the pad and rotor.

15. B — Master cylinder internal bypass — A pedal that drops under sustained pressure during a static bleed test with vacuum depleted indicates the master cylinder primary cup is bypassing fluid internally. This is a definitive master cylinder failure test — the pedal movement is caused by fluid crossing the primary cup seal under load.

16. B — Single sensor fault disables both systems simultaneously — ABS and traction control share the same wheel speed sensor inputs. Both systems require accurate wheel speed data from all four sensors to function. A single sensor fault simultaneously removes the critical input both systems need, disabling or degrading both at once.

17. A — Air in ABS modulator — Replacing the master cylinder requires disconnecting brake lines, which can introduce air into the system including the ABS modulator. If the modulator was not properly bled — including a scan-tool-guided solenoid cycling procedure — trapped air illuminates the ABS warning light after the repair.

18. B — Glazed shoe linings — Parking brake holding force depends entirely on the friction between the shoe lining and drum. Glazed linings have a hardened, polished surface with a

dramatically reduced coefficient of friction. While adequate for flat ground, the reduced friction cannot generate enough holding force to overcome vehicle weight on a grade.

19. B — Front rotor lateral runout or thickness variation — Steering wheel vibration during braking that is absent during normal driving is caused by rotor runout or thickness variation at the front axle. The pulsating clamping force from the uneven rotor surface transmits directly through the suspension and steering linkage to the steering wheel.

20. C — Collapsed brake hose acting as check valve — A deteriorated inner hose lining creates a flap that opens under pressure but closes when pressure releases, trapping hydraulic pressure at the caliper. Opening the bleeder releases the trapped pressure manually. This is confirmed when the wheel turns freely with the bleeder open but locks again when it is closed.

21. B — Verify correct part number — Brake shoe width is a critical dimensional specification. Narrower shoes reduce the total friction surface area contacting the drum, reducing braking effectiveness, altering heat distribution, and causing uneven wear patterns. The correct part number must be confirmed before installation.

22. B — Rear brake self-adjusters — On a rear drum brake vehicle, excessive pedal travel with a firm pedal bottom is most commonly caused by excessive shoe-to-drum clearance. Inoperative or improperly adjusted self-adjusters are the leading cause of this clearance and should be inspected and corrected first.

23. D — Eye protection and ventilation — Brake cleaner is an aggressive chlorinated or non-chlorinated solvent. Its vapors are hazardous to the respiratory system and eyes. Proper personal protective equipment including eye protection and working in a well-ventilated area are the most important safety requirements when using brake cleaner.

24. B — Left front and right rear — A diagonal split system divides the hydraulic circuits along diagonal axle lines rather than front-to-rear. If the right front circuit fails, the left front and right rear circuit remains intact, providing braking at two wheels on opposite corners of the vehicle and maintaining some directional stability.

25. B — Significantly reduced braking effectiveness — In a leading-trailing drum brake, the primary shoe faces the direction of drum rotation and is self-energized by the servo effect. Installing it in the trailing position reverses this effect. The shoes work against each other rather than in their designed servo relationship, dramatically reducing braking force.

26. A — Faulty yaw rate sensor — ESC uses yaw rate sensor data to detect unwanted vehicle rotation. A faulty sensor sending false rotation signals causes the module to command corrective braking even when the vehicle is traveling straight. This produces ESC activation on a straight road with no driver steering input.

27. B — Debris on bracket mounting surface — Corrosion buildup, rust ridges, or debris on the caliper bracket mounting surface prevent the caliper from seating flush and squarely. Even a small

amount of material between mating surfaces tilts the caliper, causing uneven pad-to-rotor contact and uneven pad wear.

28. C — Air pocket at high point of brake line routing — After a complete ABS bleed procedure, a persisting slight sponginess often traces to a small air pocket trapped at the highest point of the brake line routing where the line rises before descending to the caliper. This air cannot always be fully purged during standard bleeding sequences.

29. B — Brake pad thermal fade — Pedal fade that develops during repeated hard stops and recovers fully after cooling is the textbook definition of brake pad thermal fade. The friction material reaches its thermal limit and temporarily loses its coefficient of friction. After cooling below this threshold, normal friction and pedal feel return completely.

30. C — Thickness variation (parallelism) — Thickness variation describes a condition where the rotor faces are not parallel to each other around the circumference. As the rotor turns, the varying thickness alternately pushes and releases the caliper pistons, creating a pulsating pedal. This is measured by taking multiple thickness readings around the rotor.

31. B — Rear drum brake shoe lining — A leaking rear axle seal allows differential or axle gear oil to migrate inward along the axle shaft and contact the rear drum brake shoes. Oil contamination of brake shoe linings dramatically reduces the coefficient of friction and requires immediate replacement of both shoes and correction of the seal leak.

32. A — Pads not yet bedded in — New brake pads have a smooth factory surface that has not yet transferred a thin, even layer of friction material onto the rotor. Until proper bed-in is performed, the pads are not at their rated full friction coefficient, resulting in longer stopping distances despite normal pedal feel.

33. B — Internal master cylinder bypass — A pedal that creeps down under sustained application with no external leaks is the definitive symptom of internal master cylinder bypass. Fluid is crossing the primary cup seal under sustained pressure, allowing the piston to slowly move forward and the pedal to drop while maintaining system pressure momentarily when released.

34. B — Shoes inside rotor hat contact inner drum surface — A drum-in-hat parking brake uses small brake shoes that contact a cylindrical drum surface machined into the inside of the rear rotor hat. When the parking brake is engaged, the cable actuates a lever that expands these shoes against the inner drum surface, completely independent of the service brake disc system.

35. D — Slow-opening check valve — Some brake booster check valves have a slight restriction or slow opening characteristic that takes a few seconds to allow full vacuum buildup after startup. This produces a briefly hard pedal at initial brake application that softens quickly as vacuum reaches full reserve level in the booster.

36. A — Penetrating oil and flare nut wrench — Penetrating oil breaks the corrosion bond between the fitting threads and the master cylinder port. A flare nut wrench is mandatory because it grips

the fitting on five of its six sides, preventing rounding. Open-end wrenches grip only two sides and will round off already-corroded fittings.

37. B — Load-sensing valve functioning correctly — A load-sensing proportioning valve is specifically designed to reduce rear brake pressure when the rear suspension is in a high position (lightly loaded) and allow more pressure when the suspension is compressed (heavily loaded). Rear wheel lockup under light loading is the expected behavior when the system is working as designed.

38. B — Front brakes may overpower rear brakes — Installing a higher friction coefficient pad on the front axle increases front braking bias. During hard stops, this shifts more braking force to the front, reducing the proportioning effect and increasing the likelihood of rear wheel lockup, particularly on vehicles not equipped with EBD.

39. B — Use a screw extractor — A screw extractor set is the correct first approach for a rounded bleeder screw. Extractors grip the damaged fastener from the inside and apply removal torque without damaging the caliper body. Drilling out and retapping a caliper body risks producing metal debris that can contaminate the hydraulic system.

40. B — Surface rust breaking free on first application — Overnight surface oxidation forms a thin rust layer on the rotor faces. The first brake application grinds this layer off with a single pop or clunk as the full pad surface suddenly grips the rotor. This noise is a normal single occurrence that does not repeat once the rust has been cleared.

41. D — Tone ring with a single damaged tooth — A single missing or damaged tooth on a tone ring produces a very brief signal dropout that only appears at low wheel speeds where individual tooth spacing is more significant relative to the sensor's sampling rate. At higher speeds the dropout becomes too short to register as a fault, making it intermittent and difficult to capture.

42. B — Lining lifting away from shoe table — Rust jacking occurs when corrosion develops between the bonded lining and the steel shoe table, expanding and lifting the lining away from its bonded surface. This reduces effective contact area between the lining and drum, reduces braking force, and can cause the lining to crack or detach suddenly during hard braking.

43. B — EBD failure without setting a code — Some EBD failures are silent — the system stops modulating rear brake pressure without illuminating a warning light or storing a DTC. Without EBD limiting rear circuit pressure during hard stops, full master cylinder pressure reaches the rear brakes and causes lockup in conditions where EBD would normally intervene.

44. B — Depleted corrosion inhibitors corroding internal components — Brake fluid test strips measure dissolved copper ions in the fluid, which come from copper brake lines being attacked by fluid that has lost its corrosion-inhibiting additives. High copper content means the fluid is actively corroding internal metal components and must be replaced immediately.

45. C — Shoes not properly adjusted — After drum brake service, the shoes must be manually adjusted to bring them close to the drum surface. Without this adjustment, the shoes sit far from the drum and the pedal must travel excessively before the wheel cylinders push the shoes out far enough to make contact, producing weak, delayed rear brake response.