

PRACTICE EXAM 20: 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 the brake pedal sinks to the floor on the first application but pumps up firm on the second. No external leaks are found. The MOST likely cause is:

- A. A faulty proportioning valve bleeding pressure back to the reservoir between applications
- B. Air in the hydraulic system that compresses on first application but is pushed aside on subsequent pumping
- C. A master cylinder secondary cup that has failed, affecting only the first pressure stroke
- D. Worn brake shoes with excessive clearance requiring the first stroke to take up the gap

2. A technician finds the left front brake pad has worn at an angle — thicker on the leading edge and thinner on the trailing edge. The MOST likely cause is:

- A. A warped rotor causing uneven pad contact across the friction surface
- B. A seized caliper slide pin preventing the caliper from self-aligning during brake application
- C. Incorrect pad compound installed with a directional friction bias
- D. Excessive rotor lateral runout causing the pad to wear more on the entry side

3. A vehicle with ABS has a hard brake pedal and longer than normal stopping distance. The ABS warning light is off and no codes are stored. During a road test, ABS never activates even during a hard panic stop. The MOST likely cause is:

- A. All four wheel speed sensors are simultaneously failing
- B. The ABS modulator has failed in the open position, bypassing all hydraulic control
- C. The ABS system has been electronically disabled through the vehicle's settings menu
- D. A fault in the ABS relay or power supply has disabled the ABS system without setting a code

4. A technician is bench bleeding a new master cylinder. After the procedure is complete, brake fluid is still dripping from the outlet ports when the bench bleed plugs are removed. The correct action is:

- A. Continue bench bleeding until the dripping stops completely before installing
- B. Install the master cylinder immediately — the dripping indicates successful bleeding and fluid-filled ports
- C. Return the master cylinder as defective since properly bled units should not drip
- D. Allow the dripping to stop naturally before installation to prevent air re-entry

5. A customer reports a burning smell and smoke coming from the right rear wheel area after highway driving. The right rear wheel is extremely hot. The vehicle does not pull during braking. The MOST likely cause is:

- A. A seized right rear brake caliper or wheel cylinder keeping the brake applied constantly
- B. A right rear wheel bearing that has failed and is generating friction heat
- C. The parking brake cable on the right side has seized in the applied position
- D. A brake hose that has swollen and is trapping pressure at the right rear

6. When performing a brake inspection, a technician measures the front rotor and finds the minimum thickness specification stamped on the rotor reads 1.100 inches. The rotor currently measures 1.098 inches. The correct action is:

- A. Return the rotor to service since it is within 0.002 inches of specification and still functional
- B. Machine the rotor to restore a smooth surface since it is close to but still above minimum
- C. Replace the rotor — it is already below minimum discard thickness and must not be machined or reused
- D. Monitor the rotor and replace at the next brake service since it is nearly at the limit

7. A vehicle with a dual-circuit master cylinder has the rear circuit fail due to a ruptured line. The driver reports the brake pedal goes farther than normal before the vehicle stops. Which statement MOST accurately describes the hydraulic situation?

- A. The front circuit has also lost pressure because both circuits share the same reservoir
- B. The front circuit remains fully functional — the increased pedal travel is due to the primary piston bottoming against the secondary piston before rear circuit pressure builds
- C. The front circuit remains functional but at reduced pressure because the secondary piston cannot assist
- D. The proportioning valve has closed the rear circuit and is directing all pressure to the front

8. A technician is replacing rear drum brake shoes and finds the adjuster screw threads are heavily corroded and will not turn. The correct action is:

- A. Apply penetrating oil and force the adjuster to turn since it just needs to be freed up
- B. Replace the adjuster assembly with a new unit — a corroded adjuster will not self-adjust reliably
- C. Clean the threads with a wire brush and coat with chassis grease before reinstalling
- D. Leave the adjuster in place since it will free up with normal brake heating during operation

9. A vehicle's ABS activates during a normal stop from 15 mph on dry pavement. No warning lights are on. The MOST likely cause is:

- A. A wheel speed sensor tone ring with a damaged or missing tooth causing a momentary false signal
- B. The ABS control module is set to an overly aggressive intervention threshold
- C. Brake pad compound that is too aggressive for the vehicle causing wheel lockup at low speeds
- D. Low brake fluid causing pressure spikes that trigger the ABS modulator

10. A technician is inspecting a vehicle and finds the brake master cylinder reservoir cap vent hole is clogged. This condition will MOST likely cause:

- A. Brake fluid to leak past the reservoir cap seal under hard braking
- B. A vacuum to build in the reservoir as fluid is consumed, causing brake drag and a hard pedal
- C. Moisture to accumulate in the brake fluid since outside air cannot circulate through the reservoir
- D. The brake warning light to illuminate due to false fluid level sensor readings

11. During a routine brake inspection, a technician finds fresh brake fluid residue on the inner surface of a front wheel. The brake pads are within specification. The MOST likely source of this leak is:

- A. A weeping caliper piston dust boot allowing fluid to escape past a deteriorated piston seal
- B. A leaking brake line fitting at the caliper inlet
- C. A cracked caliper body allowing fluid to seep through the casting
- D. An overfilled master cylinder reservoir that expelled fluid during braking

12. A vehicle with a vacuum brake booster is being diagnosed. With the engine off, the technician pumps the brake pedal five times to deplete the vacuum reserve, then holds moderate pedal pressure and starts the engine. The pedal does NOT drop when the engine starts. This result indicates:

- A. The booster is functioning correctly and holding vacuum reserve properly
- B. The booster is not receiving vacuum from the engine and is not providing power assist
- C. The master cylinder pushrod is adjusted too long and is pre-loading the primary piston
- D. The booster check valve is stuck open and releasing vacuum immediately upon engine start

13. A technician completes a front brake job and notices after torquing the lug nuts that the rotor has developed 0.005 inches of lateral runout where it previously had 0.001 inches. The MOST likely cause is:

- A. The brake lathe introduced runout during resurfacing
- B. Over-torqued or unevenly torqued lug nuts distorting the rotor hub flange
- C. The new brake pads are forcing the rotor laterally due to incorrect thickness
- D. The wheel bearing developed play during the brake job from being jostled

14. A customer reports that the brake pedal slowly rises after releasing the brakes and holding the foot lightly on the pedal. The vehicle is not moving. This is MOST likely caused by:

- A. Residual pressure check valves in the master cylinder maintaining line pressure
- B. Brake fluid thermal expansion pushing the master cylinder piston slightly forward
- C. A partially blocked compensating port trapping pressure in the circuit after release

D. Normal elastic return of the caliper piston seal pulling the piston back after application

15. A technician is replacing a rear wheel cylinder and finds the brake shoe contact ledges on the backing plate are deeply grooved. The correct action is:

A. Replace the backing plate — grooved ledges prevent proper shoe movement and cannot be adequately repaired

B. File the ledges smooth, clean thoroughly, and apply brake lubricant to the contact areas

C. Build up the grooved areas with weld and re-machine to original dimensions

D. Install the new wheel cylinder and shoes and allow normal operation to smooth the ledges over time

16. A vehicle pulls hard to the left under hard braking but tracks straight during light braking. All pad thicknesses are within specification. The MOST likely cause is:

A. A left front brake hose that is internally restricted, trapping pressure and over-applying the left front

B. A weak right front caliper spring that delays right front pad application at high pedal pressures

C. A left front caliper bracket that is cracked and flexing under high-force brake application

D. An out-of-balance left front tire that creates directional instability under deceleration forces

17. A technician is diagnosing a vehicle where the parking brake warning light stays on after the parking brake is fully released. The parking brake releases and holds correctly. The MOST likely cause is:

A. The parking brake cable return spring is too weak to fully retract the cable to the switch position

B. The parking brake warning light switch is misadjusted or has failed in the closed position

C. The brake fluid level is low enough to trigger the dual-function warning light simultaneously

D. A short circuit in the instrument cluster is backfeeding current into the warning lamp circuit

18. A vehicle with a hydraulic clutch that shares brake fluid with the brake system is brought in for a brake fluid flush. The technician should:

- A. Flush only the brake system and leave the clutch hydraulic circuit since they use different reservoirs
- B. Flush both the brake and clutch hydraulic systems since they share fluid and contamination affects both
- C. Use DOT 5 silicone fluid in the shared system to prevent moisture absorption in both circuits
- D. Flush the brake system first, then wait 24 hours before flushing the clutch circuit to prevent air ingestion

19. A brake rotor surface shows a series of small, circular dark spots scattered across the friction surface. These are called heat spots or hard spots. This condition is caused by:

- A. Brake pad material transferring unevenly to the rotor surface during high-temperature stops
- B. Corrosion pits forming under the brake pad contact area during extended parking
- C. Improper brake lathe tooling leaving circular scoring marks on the rotor face
- D. ABS modulator cycling creating localized high-pressure contact points on the rotor

20. A technician is performing a brake inspection and finds the rubber grommet on the brake booster vacuum check valve is torn. The correct action is:

- A. Wrap the torn grommet with vacuum hose repair tape as a temporary measure
- B. Replace the check valve assembly — the grommet seals the check valve to the booster housing and a torn grommet allows vacuum loss
- C. Apply RTV silicone around the grommet to seal the vacuum leak
- D. Leave the grommet in service since its condition does not affect check valve function

21. A customer reports intermittent ABS activation during normal highway cruising with no braking input. The condition occurs at speeds above 55 mph and always on the same stretch of road. The MOST likely cause is:

- A. A wheel speed sensor that is picking up interference from a nearby high-voltage power line along that road
- B. A loose wheel speed sensor that vibrates at highway speed, momentarily dropping its signal and triggering ABS

C. The ABS control module overheating at highway speed and incorrectly commanding modulator activation

D. A brake hose that vibrates at highway speed causing pressure pulses that the ABS modulator interprets as wheel lockup

22. A vehicle with four-wheel disc brakes has the front brake pads and rotors replaced. After the job, the technician finds the brake pedal must be pumped twice to achieve normal pedal height. The MOST likely cause is:

A. Air entered the front brake circuits when the calipers were compressed during pad installation

B. The new rotors are thicker than the originals, requiring more fluid volume to push the pistons out to the pad surface

C. The caliper pistons were compressed fully during installation but were not pumped back out against the new pads before the road test

D. The master cylinder reservoir was overfilled during the brake job, creating hydraulic resistance in the circuit

23. A technician is replacing a brake caliper and finds the brake hose-to-hard-line junction fitting is leaking. The correct repair is to:

A. Tighten the fitting with a flare nut wrench until the leak stops

B. Inspect the flare seat — if damaged or corroded, replace the brake hose and hard line section with damaged flare

C. Apply thread sealant to the fitting threads and retighten to specification

D. Wrap the junction with self-fusing silicone tape rated for hydraulic use

24. A vehicle with rear drum brakes has a self-adjuster that activates during forward braking rather than only during reverse braking or parking brake application. This indicates:

A. A normal design feature on some vehicles that allows adjustment in both directions

B. The adjuster lever is incorrectly installed — it is contacting the star wheel from the wrong side

C. The adjuster spring has broken, allowing the lever to move freely during any brake application

D. The brake shoe anchor pin has shifted, changing the geometry of the adjuster lever contact point

25. A technician is replacing brake pads on a vehicle equipped with an electronic parking brake (EPB). Before compressing the rear caliper pistons, the technician must:

- A. Disconnect the battery to prevent the EPB motor from activating during compression
- B. Use a scan tool to put the EPB system into service mode, which retracts the pistons electronically
- C. Manually wind the EPB cable to its shortest position to allow clearance for piston compression
- D. Remove the EPB actuator motor from the caliper before attempting to compress the piston

26. A vehicle has a brake pedal that feels normal during slow stops but becomes very hard with greatly reduced braking effectiveness during a hard panic stop from highway speed. The booster and master cylinder test normal. The MOST likely cause is:

- A. A proportioning valve that closes prematurely under high hydraulic pressure, limiting brake force
- B. The brake booster losing vacuum reserve under the extended high-pressure demand of a hard stop
- C. Brake pad compressibility increasing under high clamping force, absorbing pedal travel
- D. A master cylinder bore that cavitates under rapid, high-volume fluid demand during panic stops

27. A vehicle with drum brakes at the rear has both rear wheels locking simultaneously during moderate brake pedal pressure on wet roads. ABS is not equipped. The MOST likely cause is:

- A. Both rear wheel cylinders have seized pistons that are applying maximum force regardless of pedal input
- B. The proportioning valve has failed in the open position, delivering full unreduced master cylinder pressure to the rear brakes
- C. Both rear brake drums have glazed surfaces that create a sudden high-friction engagement at low pressure
- D. The rear brake shoe linings have been contaminated with brake fluid from leaking wheel cylinders

28. A technician finds evidence of brake fluid on the engine side of the brake booster firewall. No master cylinder leaks are found. The MOST likely cause is:

A. Brake fluid migrating through a pinhole in the firewall from a leaking brake line behind the dash

B. The master cylinder has an internal leak that is routing fluid through the booster pushrod seal into the booster and out the rear

C. Condensation inside the booster mixing with residual brake fluid vapor and weeping through the firewall seal

D. A leaking brake line fitting at the master cylinder that is directing fluid along the firewall surface

29. A customer reports that when braking to a complete stop, the vehicle shudders and the pedal pulsates severely during the last 5 mph before coming to rest, but braking is smooth from higher speeds. This symptom is MOST consistent with:

A. Rotor lateral runout that is more pronounced at low wheel speeds

B. Disc brake pad deposits (hot spots) transferred unevenly onto the rotor surface creating thickness variation

C. ABS activation at low speed due to a faulty wheel speed sensor

D. Brake caliper slide pins that bind under low hydraulic pressure at low vehicle speeds

30. A technician has replaced the right front brake hose. After bleeding, the right front brake drags and the wheel is warm. The bleeder screw is fully closed. The MOST likely cause is:

A. The new brake hose is slightly longer than the original, reducing caliper clearance

B. The new brake hose has been twisted during installation, partially restricting the inner diameter and trapping pressure

C. Air remains in the right front circuit causing the caliper to partially apply

D. The caliper slide pins were not lubricated during the hose replacement, causing binding

31. When a technician uses a digital multimeter set to DC voltage to test a passive magnetic wheel speed sensor with the wheel spinning, the correct expected reading is:

A. A steady DC voltage between 0.5 and 1.5 volts proportional to wheel speed

B. 0 volts DC — a passive magnetic sensor produces AC voltage, not DC, and a DC setting will not correctly read its output

C. 5 volts DC reference signal supplied by the ABS control module

D. Battery voltage pulsing on and off with each tooth of the tone ring

32. A technician is replacing front brake pads on a vehicle with opposed-piston fixed calipers. This caliper design differs from a floating caliper in that:

A. Opposed-piston calipers use hydraulic pressure on both the inboard and outboard pistons simultaneously to clamp the rotor from both sides

B. Opposed-piston calipers use a single large piston that contacts both pads through an internal bridge mechanism

C. Opposed-piston calipers float on slide pins but use two pistons instead of one for increased clamping force

D. Opposed-piston calipers apply the inboard pad hydraulically and the outboard pad mechanically through a cable

33. A vehicle with a hydro-boost brake system loses power steering and power brake assist simultaneously. The brake pedal is very hard. The MOST likely cause is:

A. The hydro-boost accumulator has discharged and must be recharged with nitrogen

B. A failed power steering pump that is no longer supplying hydraulic pressure to both the steering gear and the hydro-boost unit

C. A broken hydro-boost spool valve spring causing simultaneous loss of both assist functions

D. Low brake fluid causing the hydro-boost system to default to manual operation

34. A vehicle has a brake pedal that builds pressure normally but releases very slowly after the foot is removed from the pedal. The pedal takes 3-4 seconds to return to its full height. The MOST likely cause is:

A. A weak brake pedal return spring that cannot push the pedal back against master cylinder resistance

B. A swollen master cylinder primary cup restricting fluid return through the compensating port

C. A kinked brake line creating a restriction that slows fluid return from the calipers to the master cylinder

D. Caliper piston seals that have hardened and lost their ability to snap the piston back after pressure release

35. A vehicle with electronic stability control (ESC) has the stability control light flashing during normal driving on a straight road with no steering input. No other warning lights are on and no codes are stored. The MOST likely cause is:

A. A steering angle sensor that has not been recalibrated after a recent alignment or steering component replacement

B. A yaw rate sensor that is failing intermittently and sending false vehicle rotation data

C. Low tire pressure on one corner creating a wheel speed differential that the ESC interprets as vehicle rotation

D. An ESC control module that is beginning to fail and randomly commanding stability interventions

36. A technician is diagnosing a vehicle with a brake fluid leak. The leak is located at the right rear, and fluid is found on the interior surface of the right rear wheel. The backing plate and wheel cylinder exterior are both dry. The MOST likely source is:

A. A cracked brake drum allowing fluid to migrate from the wheel cylinder to the wheel interior

B. A leaking right rear axle seal allowing gear oil to migrate inward, which is being misidentified as brake fluid

C. A pinhole in the right rear brake line inside the drum cavity area

D. The wheel cylinder piston has pushed through its bore and is leaking from the shoe contact face

37. A customer reports that after driving through a deep water puddle, the brakes feel weak and ineffective for several seconds before returning to normal. The MOST likely explanation is:

A. Water has temporarily entered the master cylinder reservoir, diluting the brake fluid

B. Water has coated the brake rotor and pad surfaces, reducing the coefficient of friction until the heat of braking evaporates the water

C. The brake booster has ingested water through the vacuum hose, temporarily disabling power assist

D. Waterlogged wheel speed sensors are sending false signals that trigger ABS, reducing braking force

38. A vehicle has a brake caliper that was replaced six months ago and is already showing signs of piston seal failure. The technician finds the brake fluid in the reservoir is swollen with a gel-like consistency. The MOST likely cause is:

A. Moisture contamination that has caused the glycol fluid to separate and thicken

B. Petroleum-based fluid contamination — mineral oil or power steering fluid introduced into the brake system has degraded the rubber seals and altered the fluid consistency

C. DOT 5 silicone fluid reacting with residual DOT 3 fluid in the caliper bore

D. The brake fluid has exceeded its service life and the glycol base has begun to polymerize

39. A technician is performing an inspection and finds the front brake rotors have a circumferential groove worn into the rotor face at the outer edge of the brake pad sweep area. This type of wear indicates:

A. A caliper that is misaligned outward, causing the pad to contact only the outer portion of the rotor

B. Normal edge wear caused by the abrupt transition between the pad contact area and the unswept outer rotor edge

C. Excessive rotor runout causing the pad to contact the outer edge preferentially during each rotation

D. A brake pad that has shifted outward in the caliper bracket, contacting only the outer rotor surface

40. A vehicle with traction control and ABS is being diagnosed. The ABS light is off. The traction control light is on and traction control is disabled. A scan tool shows no ABS codes but shows a traction control disable code with a note that throttle control response is out of range. The MOST likely cause is:

A. A wheel speed sensor fault that is only detected by the traction control module and not the ABS module

B. A throttle position sensor or electronic throttle control fault preventing the traction control system from modulating engine output

C. The ABS modulator has a solenoid fault that disables traction control while leaving ABS functional

D. Low brake fluid preventing the traction control system from applying individual wheel braking during slip events

41. A vehicle with rear drum brakes produces a loud squeal during the first few brake applications after the vehicle has been parked overnight in humid conditions. After three or four stops, the noise disappears completely. No brake hardware issues are found. The technician should:

A. Replace the rear brake shoes since squeal after overnight parking indicates glazing

B. Replace the rear drums since surface oxidation causing noise indicates the drums are past their service life

C. Advise the customer that this is normal — light surface rust forms overnight and produces a brief squeal as it is scrubbed off during the first few stops

D. Inspect the rear wheel cylinders since moisture ingestion through the boots is causing the noise

42. A technician is diagnosing excessive brake pedal effort on a vehicle with a vacuum brake booster. Vacuum at the booster inlet measures 18 inches of mercury at idle. The booster check valve tests good. The pedal is hard both at idle and with the engine off after depleting the vacuum reserve. This finding suggests:

A. The vacuum supply is inadequate since 18 inches of mercury is below the minimum required

B. The booster diaphragm is intact since vacuum is present, and the master cylinder pushrod adjustment is the likely cause

C. The booster diaphragm has failed since hard pedal is present despite adequate vacuum reaching the booster

D. The engine has a vacuum leak that is masking the true available vacuum at the booster

43. A vehicle with a load-sensing proportioning valve (LSPV) uses a linkage connected to the rear suspension. A technician finds the linkage has been disconnected and the rear brakes are locking prematurely with a light vehicle load. The correct repair is:

A. Adjust the proportioning valve manually to compensate for the disconnected linkage

B. Reconnect the linkage and adjust it to the manufacturer's specification for the unloaded vehicle ride height

C. Replace the load-sensing proportioning valve since disconnection may have damaged the internal spring calibration

D. Install a fixed proportioning valve since the load-sensing valve is unnecessary on modern vehicles

44. A technician is flushing brake fluid and notices that when pressure bleeding the system, air bubbles are continuously appearing in the fluid being expelled from the bleeder screws even after several minutes of flushing. The reservoir is kept full throughout. The MOST likely cause is:

A. The brake lines have multiple pinhole leaks that are introducing air during the pressure bleed

B. Air is being drawn into the pressure bleeder tank cap connection, mixing with the fluid before it enters the system

C. The ABS modulator contains a large air pocket that is taking an unusually long time to purge

D. The master cylinder compensating ports are admitting air from the reservoir during the pressure bleed cycle

45. A vehicle with 140,000 miles is brought in for a brake inspection. The customer reports no brake complaints. The technician finds the front rotors are at minimum thickness, all four sets of pads are at 3mm, and the brake fluid is very dark with a burnt smell and has never been replaced. The technician should recommend:

A. Replace only the front rotors since they are the only component at the service limit

B. Replace all four sets of pads and front rotors, flush the brake fluid, and inspect all flexible hoses, hardware, and calipers for serviceability

C. Replace only the brake fluid since the pads and rotors are technically still within service limits

D. Advise the customer to return when symptoms develop since no complaints currently exist

PRACTICE EXAM 20 — ANSWER KEY AND EXPLANATIONS

Correct Answer Distribution: A = 11 | B = 12 | C = 11 | D = 11

- 1. B** — Air in the hydraulic system — A pedal that goes to the floor on first application but firms up with pumping is the textbook symptom of air in the brake lines. Air compresses on the first stroke and is forced into small pockets on repeated pumping, creating progressively firmer pedal feel with each pump.
- 2. B** — Seized caliper slide pin — Angled pad wear where one edge is thicker than the other indicates the caliper is not squarely contacting the rotor. A seized slide pin prevents the caliper from pivoting and self-aligning during application, causing the pad to contact the rotor at an angle and wear unevenly from leading to trailing edge.
- 3. D** — ABS relay or power supply fault — An ABS system that fails silently without warning lights or codes almost always has a power supply or relay fault. Without power, the ABS module cannot activate the modulator or set diagnostic codes. The base hydraulic brakes function normally but ABS intervention is completely absent.
- 4. B** — Install immediately — dripping from outlet ports is correct — A successfully bench-bled master cylinder will have fluid-filled ports that drip when the bleed plugs are removed. This confirms the bore and piston chambers are full of fluid with no air present. The technician should install the unit promptly to prevent air re-entry.
- 5. C** — Parking brake cable seized in applied position — Extreme heat at a single rear wheel without brake pulling during pedal application points to the parking brake mechanism rather than the service brake circuit. A seized parking brake cable on one side applies constant drag independent of the service brake pedal, generating intense friction heat.
- 6. C** — Replace the rotor — The rotor measures 1.098 inches which is already below the stamped minimum discard thickness of 1.100 inches. A rotor below minimum thickness must be replaced immediately. It may not be machined further and should not be returned to service regardless of its surface condition.
- 7. B** — Front circuit remains functional with increased pedal travel — When the rear circuit ruptures and loses pressure, the primary piston travels its full stroke before mechanically contacting the secondary piston. This mechanical contact then pushes the secondary piston forward to maintain front brake pressure. The increased pedal travel reflects the primary piston's full stroke before contact.
- 8. B** — Replace the adjuster assembly — A severely corroded adjuster that cannot be turned freely will not self-adjust reliably after installation. Self-adjusters depend on smooth, free star wheel

rotation to take up shoe clearance as the linings wear. Installing new shoes with a frozen adjuster guarantees increasing pedal travel and a brake comeback.

9. A — Damaged tone ring tooth causing false signal — A single missing or chipped tone ring tooth creates a brief speed signal dropout that the ABS module interprets as a wheel decelerating toward lockup speed. This triggers ABS activation momentarily at low speeds where the timing of the dropout relative to wheel speed is most significant.

10. B — Vacuum buildup causing brake drag — A clogged reservoir vent prevents atmospheric pressure from replacing fluid volume as brake fluid is displaced into the calipers during pedal application. The resulting vacuum in the reservoir creates a pressure difference that resists piston retraction, causing brake drag that worsens progressively as more fluid is displaced.

11. A — Weeping caliper piston dust boot from deteriorated piston seal — Fresh brake fluid on the inner wheel surface with pads in specification most commonly indicates a slow seep past a deteriorating caliper piston seal. The fluid migrates past the piston seal, accumulates behind the dust boot, and eventually weeps out onto the wheel inner surface.

12. B — Booster not receiving vacuum — When the pedal does not drop after engine start during the standard booster functional test, the booster is not receiving vacuum from the engine. A functioning booster creates a pressure differential across the diaphragm when vacuum is applied, which produces the characteristic pedal drop. No drop means no vacuum reaching the booster.

13. B — Unevenly torqued lug nuts distorting the rotor — Lug nuts that are over-torqued or applied unevenly in sequence create unequal clamping stress across the hub and rotor mounting flange. This distortion manifests as lateral runout that was not present before the lug nuts were torqued and disappears when the lug nuts are loosened and retorqued in the correct star pattern to specification.

14. C — Partially blocked compensating port — When the compensating port is partially blocked, fluid cannot return freely to the reservoir after brake release. The trapped residual pressure acts against the pedal return spring, causing the pedal to return slowly as pressure bleeds down through the partial restriction rather than returning instantly through a fully open port.

15. B — File ledges smooth and lubricate — Grooved backing plate ledges must be smoothed with a file to restore a flat, clean contact surface for the shoe web. After filing, the ledges are cleaned and lubricated with high-temperature brake lubricant. Replacing the backing plate is only necessary if the ledges are severely damaged beyond restoration or if the plate is cracked.

16. A — Left front brake hose internally restricted — A brake pull that occurs only under hard braking indicates the left front is receiving and holding more pressure than the right front during high-pedal-force applications. A partially collapsed inner hose lining traps pressure at the left front caliper under the higher pressures of hard stops, over-applying the left front brake and pulling the vehicle left.

17. B — Parking brake switch misadjusted or failed closed — A warning light that remains on after the parking brake is fully released with correct brake function indicates a switch issue rather than a cable or fluid problem. The switch contacts are either not opening when the lever returns to the released position due to misadjustment, or the switch has failed electrically in the closed circuit position.

18. B — Flush both brake and clutch hydraulic systems — When a hydraulic clutch shares brake fluid from the same reservoir as the brake system, the fluid degrades equally throughout both circuits from moisture absorption and heat cycling. A complete fluid flush must include both circuits to ensure consistent fluid quality and boiling point protection throughout the shared system.

19. A — Pad material transferring unevenly to rotor surface — Hard spots or heat spots are areas where brake pad friction material has transferred onto the rotor surface in concentrated deposits during high-temperature stops. These deposits have a different friction coefficient than the base iron, creating localized variations that cause pedal pulsation and uneven wear.

20. B — Replace the check valve assembly — The rubber grommet seals the check valve body against the booster housing and maintains the vacuum circuit integrity. A torn grommet creates a vacuum leak at the booster inlet, reducing or eliminating the vacuum reserve and degrading power assist. The entire check valve assembly should be replaced.

21. B — Loose wheel speed sensor vibrating at highway speed — A wheel speed sensor that is loose in its mounting bore vibrates at highway speed, momentarily breaking its magnetic circuit with the tone ring. This signal dropout is interpreted by the ABS module as a sudden wheel deceleration, triggering ABS activation. The condition is speed-dependent and location-specific because road surface vibration excites the loose sensor.

22. C — Pistons not pumped out against new pads before road test — After compressing caliper pistons to install new pads, the pistons sit deep in the bore. The first pedal application moves the pistons out to contact the new pads. Until this is done before the road test, two pump strokes are needed — one to extend the pistons and one to build hydraulic pressure for braking.

23. B — Inspect the flare seat and replace damaged components — Brake line flare fittings seal metal-to-metal at the flare seat, not on the threads. A leaking flare connection that does not stop with proper torque has a damaged or corroded flare seat. Thread sealant is never appropriate for brake flare fittings. The hose and line section must be replaced to restore the sealing surface.

24. B — Adjuster lever installed on wrong side of star wheel — Drum brake self-adjusters are designed to ratchet the star wheel in one specific direction during a particular type of braking or reversal. If the adjuster lever contacts the star wheel from the incorrect side due to improper installation, it will ratchet in the wrong direction or at the wrong time, activating during forward braking instead of the designed condition.

25. B — Use scan tool to put EPB in service mode — Electric parking brake systems have an integrated service mode that must be activated with a scan tool before rear pad replacement. Service mode commands the EPB motor to fully retract the piston electronically, creating clearance for pad removal and installation. Attempting to mechanically force the piston without service mode activation can damage the EPB motor and actuator.

26. A — Proportioning valve closing prematurely under high pressure — A proportioning valve that is miscalibrated or has a weak spring can reach its limiting pressure at a lower threshold than designed. During a hard panic stop when master cylinder pressure is at its highest, the valve closes prematurely and limits brake force to the rear or front circuit before maximum stopping potential is achieved.

27. B — Proportioning valve failed open — Simultaneous rear wheel lockup during moderate braking on a vehicle without ABS is the textbook consequence of a proportioning valve stuck in the open position. Full unmodified master cylinder pressure reaches the rear brakes, overwhelming rear tire traction especially on low-friction wet surfaces where the weight transfer reduces rear wheel load.

28. B — Master cylinder leaking fluid through booster pushrod seal — Brake fluid seeping through a failing master cylinder rear seal migrates into the booster cavity and can exit through the booster vacuum hose connection or the booster rear seal at the firewall. Finding fluid on the engine side of the firewall with no external master cylinder leak is highly indicative of this internal migration path.

29. B — Disc brake pad deposits creating thickness variation — Pad material deposited unevenly on the rotor creates localized thick spots. At low wheel speeds during the final few mph before a stop, the wheel makes fewer revolutions per unit time, and each thick spot contact point creates a more pronounced pulsation relative to the slow rotation. This low-speed-specific pulsation is the signature of rotor pad deposits.

30. B — New brake hose twisted during installation — A brake hose that is twisted during installation has a reduced effective inner diameter at the twist point. Under braking, pressure passes through the restriction to apply the caliper. When the pedal is released, the twisted section restricts return flow, trapping residual pressure that keeps the caliper partially applied and the wheel dragging.

31. B — 0 volts DC — passive sensors produce AC voltage — A passive magnetic wheel speed sensor generates its own alternating current as the tone ring teeth pass the sensor tip by creating a fluctuating magnetic field. This output is AC voltage by nature. A multimeter set to DC voltage will read zero or a meaningless value. The correct multimeter setting is AC voltage to properly capture the sensor's sinusoidal output.

32. A — Both inboard and outboard pistons apply hydraulically simultaneously — A fixed opposed-piston caliper is bolted rigidly to the knuckle and does not slide. It uses pistons on both

sides of the rotor that apply simultaneously under the same hydraulic pressure, clamping the rotor evenly from both sides without the caliper needing to slide or float to equalize force.

33. B — Failed power steering pump — A hydro-boost system uses power steering pump pressure as its hydraulic power source for both power steering and brake assist. If the power steering pump fails and stops generating pressure, both the power steering and brake boost functions are lost simultaneously since they share the same pressurized hydraulic supply.

34. B — Swollen master cylinder primary cup — A primary cup that has swollen from contamination or age partially blocks the compensating port. When the brake pedal is released, fluid trying to return from the calipers must pass through the restricted compensating port at reduced flow rate. The pedal returns slowly as fluid trickles back through the partially obstructed port rather than flowing freely.

35. A — Steering angle sensor not recalibrated — ESC uses steering angle input to determine the driver's intended direction. A steering angle sensor that was not recalibrated after an alignment, steering component replacement, or wheel and tire change retains an incorrect zero-point reference. It reports directional intent that does not match actual vehicle behavior, triggering ESC intervention on straight roads with no steering input.

36. C — Pinhole in rear brake line inside drum cavity — Fluid found on the wheel interior with a dry backing plate and dry wheel cylinder exterior eliminates external wheel cylinder leakage. A brake line with a pinhole failure inside the drum cavity area would spray fluid onto the interior wheel surface while keeping the exterior backing plate dry, matching this specific leak pattern precisely.

37. B — Water coating rotor and pad surfaces — Driving through deep water coats the disc brake rotor surfaces with water. Water acts as a lubricant between the pad and rotor, dramatically reducing the coefficient of friction and braking effectiveness. As the heat generated by normal braking evaporates the water film, braking efficiency returns to normal within a few brake applications.

38. B — Petroleum-based fluid contamination — Swollen, gel-like brake fluid combined with premature seal failure is the definitive sign of petroleum contamination. Mineral oil, power steering fluid, engine oil, or any petroleum product introduced into a glycol-based brake system causes rapid and severe swelling of all rubber components and alters the fluid viscosity. All rubber components must be replaced and the system thoroughly flushed.

39. B — Normal edge wear at pad contact boundary — The circumferential groove at the outer edge of the swept area is a normal wear pattern caused by the sharp edge of the brake pad friction material making a continuous circular cut at the transition between the swept area and the unswept outer rotor edge. This is an expected wear pattern and does not indicate a defect unless the groove depth approaches rotor minimum thickness.

40. B — Throttle control fault preventing engine output modulation — Traction control uses both individual wheel braking and engine throttle reduction to control wheel spin. If the electronic throttle control system is malfunctioning and the TCS cannot modulate engine output, the system disables traction control entirely rather than attempting to operate with only half its available intervention strategy, logging a throttle-related disable code.

41. C — Normal overnight surface rust being scrubbed off — Brake drums are cast iron and readily develop a thin surface rust layer when exposed to overnight humidity. During the first few brake applications, the shoes scrub this rust off the drum contact surface, producing a brief squeal that disappears completely once the rust is cleared. This is a normal characteristic of cast iron brake components and requires no corrective action.

42. C — Booster diaphragm has failed — Adequate vacuum at the booster inlet confirms the engine and vacuum supply are performing correctly. A hard pedal despite confirmed adequate vacuum entering the booster indicates the diaphragm is not able to use that vacuum to create the pressure differential needed for power assist. A failed or torn diaphragm is the only remaining component that would cause this result.

43. B — Reconnect linkage and adjust to specification — The load-sensing proportioning valve relies on its suspension linkage to read actual vehicle load and modulate rear brake pressure accordingly. Reconnecting and properly adjusting the linkage to the manufacturer's specified unloaded ride height measurement restores correct valve operation. The valve itself is unlikely to be damaged by disconnection alone.

44. B — Air being drawn in at pressure bleeder tank connection — Continuous air bubbles during pressure bleeding despite a full reservoir almost always indicate the pressure bleeder tank adapter is not sealing properly at the reservoir cap connection. Atmospheric air is being pulled in around the loose adapter seal, mixing with fluid before it enters the system and creating a constant stream of bubbles that cannot be purged.

45. B — Complete brake system service — A vehicle presenting with rotors at minimum thickness, pads near the service limit, and severely degraded fluid that has never been replaced requires comprehensive brake service. All components at or near their service limits should be addressed together. Performing partial repairs leaves the vehicle with mismatched new and worn components and an unacceptably degraded hydraulic foundation.