PRACTICE EXAM 10: ASE A5 BRAKES SIMULATION

Total Questions: 45 **Recommended Time:** 75 minutes **Domain Distribution:** Domain A: 19 questions | Domain B: 5 questions | Domain C: 11 questions | Domain D: 10 questions

1. A vehicle's brake pedal requires two or three pump strokes to become firm on the first application of the day after the vehicle has been sitting overnight. After the initial pumping the pedal is completely normal for the rest of the drive. No fluid leaks are found. Which of the following is MOST likely the cause?

A. Air is slowly migrating into the hydraulic system through the master cylinder reservoir cap overnight and is purged with the first pumping strokes

B. Brake fluid is slowly seeping past the caliper piston seals overnight when the system is depressurized, requiring the pistons to be re-extended on the first pedal strokes

C. Brake fluid is slowly draining back from the calipers or wheel cylinders to the master cylinder overnight due to gravity when the system is at rest — the first pumps re-extend the pistons to contact the pads

D. The vacuum booster loses its stored vacuum overnight — the first two pump strokes are without power assist

2. A vehicle equipped with a vacuum booster needs the engine vacuum tested. The technician connects a vacuum gauge to the booster inlet vacuum port. With the engine idling, the gauge reads 22 in-Hg. The technician then applies and holds light brake pedal pressure for 30 seconds. The vacuum gauge reading drops from 22 to 15 in-Hg during the 30 seconds of pedal hold. Which of the following does this indicate?

A. Normal vacuum booster operation — vacuum drops when the booster diaphragm applies differential pressure for braking assist

B. The vacuum check valve is leaking — manifold vacuum is being bled back toward atmospheric pressure through the leaking check valve

C. The booster diaphragm has a small leak — vacuum is being lost through the diaphragm into the atmosphere side of the booster

D. Engine vacuum is low — the engine is not producing enough vacuum to maintain the booster under sustained load

3. A vehicle's hydraulic brake system uses a diagonal split circuit design. Compared to a front/rear split design, which of the following BEST describes the handling advantage of the diagonal split during a single circuit failure?

A. The diagonal split provides better braking because both front brakes continue functioning in any single circuit failure scenario

B. With a diagonal split, a single circuit failure always leaves one front and one rear wheel braking — maintaining a more balanced braking force distribution that prevents the vehicle from pulling severely to one side

C. The diagonal split provides greater total braking capacity during partial failure because the remaining circuit covers more total brake area

D. The diagonal split maintains rear wheel braking in all failure scenarios — preventing vehicle instability from front-only braking

4. A technician has completed replacing the rear brake shoes on a vehicle with duo-servo drum brakes. During the post-installation check, the technician applies the brakes firmly while another technician watches the rear wheels. One rear wheel is visibly dragging while the other rotates freely during a slow roll. The technician removes the drum on the dragging side and finds the adjuster star wheel has been advanced to the point where the shoes are contacting the drum at rest. Which of the following MOST likely caused this over-adjustment?

A. The new brake shoe linings are thicker than the worn shoes they replaced — the linings are contacting the drum that was correctly adjusted for the old shoes

B. The star wheel was adjusted too tightly during the initial manual adjustment before drum installation

C. The automatic adjuster activated during the first brake application and advanced the shoes beyond the correct clearance

D. The return springs are too strong — they are pulling the shoes outward against the drum rather than away from it

5. A vehicle with vacuum brake booster has a condition where several firm brake applications are required to bring the vehicle to a stop from a specific speed. The engine is running and vacuum supply tests normal. The master cylinder is functioning correctly. Which of the following should the technician check NEXT?

A. The vacuum booster internal pushrod length — a short pushrod reduces force transfer to the master cylinder

B. The metering valve — it may be restricting front brake pressure to below the effective braking threshold

C. The brake fluid — contaminated fluid with high moisture content reduces hydraulic effectiveness

D. The power steering pump — power steering pump pressure indirectly affects vacuum booster performance

6. A vehicle has been in for a brake noise complaint three times in the past year. Each time, new brake pads resolve the noise for a few weeks before the squealing returns. The technician finds the current pads have heat discoloration on the friction surface and appear glazed. The rotors show corresponding mirror-like glazed sections. Which of the following MOST likely explains the recurring noise and glazing?

A. The customer is a light-brake user who rarely applies enough force to generate adequate heat for proper pad bedding — the pads are always operating in the glazing temperature range

B. The wrong brake pad compound is being installed — the pads' upper operating temperature is too low for this vehicle's brake system heat generation. The pads glaze every time, causing noise

C. The vehicle's front brake calipers are seized — the constant dragging overheats the pads and causes rapid glazing

D. The rotors have been resurfaced so many times they are below minimum thickness — thin rotors overheat and cause rapid pad glazing

7. A vehicle with rear drum brakes is being serviced. The technician installs new brake shoes, wheel cylinders, and hardware. During the test drive, the rear brakes drag and there is a burning smell. After cooling and inspection, the drum interior shows a polished ring around one specific circumference rather than uniform contact across the full drum width. Which of the following BEST explains this finding?

A. The drum is worn in a groove pattern from previous shoe wear — the shoes are contacting only the high areas of the drum

B. The brake shoe lining contact is not properly centered on the drum — only one edge of the shoe is making contact

C. The wheel cylinder was installed with the cups on the wrong pistons — one cup is not sealing against the bore correctly

D. One of the brake shoe springs is installed backwards — it is pulling one shoe edge into the drum

8. A vehicle with disc brakes on all four corners is in the shop with a complaint that the brakes squeal continuously while driving without applying the brakes. The squeal stops when the brakes are applied. After applying and releasing the brakes on a test drive the squeal resumes. Which of the following is MOST likely the cause?

A. Glazed brake pads causing squeal during rotor contact at rest clearance

B. A seized caliper piston holding one pad in continuous light contact with the rotor — the light drag causes a resonant squeal at pad-to-rotor contact that stops under firm brake application pressure

C. Worn pad wear indicator tabs contacting the rotor during normal driving but lifting off the rotor during brake application due to pad compression

D. Loose caliper mounting bolts — the caliper vibrates at rotor speed and produces squeal during rotation

9. A customer reports that after the vehicle was serviced for a parking brake cable replacement, the service brakes feel slightly spongy. The parking brake holds correctly. No fluid leaks are present. Which of the following MOST likely explains the spongy service brake feel after parking brake cable service?

A. The new cable is slightly longer than the original — the excess length causes a slight rearward tension on the rear brake shoes that affects hydraulic feel

B. On some vehicles, routing and connecting parking brake cables requires disturbing rear brake line connections — if a rear line was disturbed during cable service and not properly resealed, air entry could explain the spongy pedal

C. The new cable has different spring tension than the original — the higher tension is holding the rear drum shoes partially applied, reducing hydraulic contribution to the pedal feel

D. Parking brake cable replacement always temporarily affects service brake feel — the condition resolves after 50 to 100 brake applications

10. A vehicle has recently had its rear axle rebuilt following bearing failure. After the rebuild, the customer complains of a grabbing right rear brake during light brake application. The technician removes the right rear drum and finds the entire interior and the brake shoe linings are coated with a light layer of gear oil. Which of the following is MOST likely the cause?

A. The rear axle bearing grease was overpacked during the rebuild — excess grease is migrating past the axle seal into the drum

B. The wheel cylinder was contaminated with gear oil during the axle rebuild — the oil leaked from the cylinder body

C. The right rear axle seal was not properly installed or the wrong seal was used during the rebuild — gear oil from the differential housing is entering the drum through the failed seal

D. The new bearing used an incompatible grease that liquefies at operating temperature and migrates through the bearing race into the drum

11. A vehicle owner asks whether it is acceptable to mix two different brands of DOT 4 brake fluid when adding fluid to the reservoir. Which of the following is the BEST technical response?

A. No — different brands of DOT 4 fluid use incompatible chemical formulations that react adversely when mixed

B. Yes — DOT classification standards ensure that all DOT 4 fluids meet the same performance specifications and are chemically compatible — different brands of the same DOT classification can be mixed safely

C. Mixing is acceptable only if both fluids have the same dry boiling point — different brand formulations within DOT 4 may have different boiling points that cancel each other out when mixed

D. No — mixing different brake fluid brands voids the vehicle warranty regardless of DOT classification compatibility

12. A vehicle is inspected and found to have no metering valve in the hydraulic circuit. The vehicle has front disc and rear drum brakes. Technician A says this will cause the front discs to apply before the rear drum shoes have overcome their return spring resistance — potentially causing a front-heavy braking bias during light applications. Technician B says without a metering valve the brake warning light will illuminate because the pressure differential switch detects the front circuit applying before the rear. Who is correct?

A. Both Technician A and Technician B

B. Technician A only

C. Technician B only

D. Neither Technician A nor Technician B

13. A technician is bench bleeding a new master cylinder. Transparent tubing is looped from both outlet ports back into the reservoir. The technician pushes the piston slowly inward by hand. Fluid exits one tube with no bubbles but the other tube produces only air bubbles with very little fluid flow. After 10 strokes, the tube with no bubbles is still bubble-free but the other tube is still producing mostly air. Which of the following MOST likely explains the persistent air from one port?

A. The primary circuit outlet is blocked — the master cylinder is defective and must be returned

B. The secondary circuit has a very large air pocket — the short return tubing is not immersed deeply enough in the fluid to prevent re-ingestion of the same air bubble. Lengthen the return tubes to submerge their ends deeper and continue bleeding

C. The master cylinder was installed on the bench in an incorrect angle — tilt the unit so both ports are horizontal

D. Bench bleeding only works through one port at a time — block one port while bleeding the other, then switch

14. A customer asks why their vehicle squeaks in the morning when first backing out of the garage, specifically during the first reverse movement before the brakes are applied. The squeak stops completely once the brakes are applied and does not return. Which of the following is MOST likely the cause?

A. The front caliper pistons are extending slightly during overnight cooling and contacting the rotors before the brakes are applied

B. Overnight moisture or light condensation has deposited on the rotor friction surface — the first rotor rotation causes the brake pad to squeak against the moist surface momentarily before the moisture is pushed aside

C. Loose front wheel lug nuts rattle during the initial wheel rotation

D. The power steering pump squeaks when cold — the sound is mistaken for a brake noise

15. A vehicle develops a condition where the brakes vibrate severely under any ABS activation. The ABS activates correctly — on slippery surfaces — but the vibration during ABS is significantly more intense than normal ABS pedal feedback. No ABS faults are stored. Which of the following is MOST likely the cause?

A. The ABS pump motor is failing — the pump vibrates excessively during operation producing the intense pedal vibration

B. The brake rotors have significant parallelism variation — the normal ABS pressure cycling amplifies the existing rotor parallelism variation during ABS activation, producing severe vibration

C. The ABS solenoid valve cycle rate has been increased by a software fault — faster cycling produces more intense pedal feedback

D. One wheel speed sensor is reading inaccurately during ABS activation — incorrect data causes the module to over-modulate one circuit, producing severe vibration

16. A vehicle is being serviced for an ABS warning light. The scan tool retrieves a DTC for the left front wheel speed sensor signal. The technician measures resistance across the left front sensor terminals and reads 1,050 ohms. The specification is 900 to 1,200 ohms. The technician replaces the sensor anyway. After replacement the code returns within 10 miles. Which of the following BEST describes the diagnostic error?

A. The replacement sensor is also defective — a second consecutive defective sensor from the same supplier

B. The technician replaced the sensor based on a DTC without verifying that the sensor resistance was outside specification — the original and replacement sensors both tested within spec, indicating the fault is in the wiring circuit or tone ring, not the sensor

C. The DTC requires two consecutive drive cycles to confirm before diagnosis — the technician should have cleared and retested

D. Resistance testing is not a valid test for wheel speed sensors — only oscilloscope testing provides accurate sensor diagnosis

17. A vehicle with rear disc brakes has new pads installed. Three weeks later the customer returns with a complaint of brake squeal. A pad inspection reveals both rear inboard pads have lightly scored friction surfaces with a ridge at the outer edge. Both rear outboard pads appear normal. Which of the following MOST likely caused the inboard pad scoring?

A. The rear rotors were not resurfaced during the pad replacement — the old rotor surface is incompatible with the new pad compound

B. The caliper pistons were not fully retracted before installing the new pads — the pistons are extended too far and the inner edge of the inboard pad contacts the rotor at an angle

C. The caliper slide pins are seized — the caliper is not returning after application and the inboard pad drags continuously against the rotor surface

D. The rear brake pads were installed with the anti-squeal shims facing the rotor — the metal shim surface is scoring the pad friction face

18. A vehicle's front disc brakes have a noise described as a rhythmic ticking or clicking that occurs once per wheel revolution during low-speed driving. The noise is present whether or not the brakes are applied. The noise disappears completely above approximately 25 mph. Which of the following is MOST likely the cause?

A. A small stone or debris lodged between the brake pad and rotor — at low speeds the object is heard as it contacts the pad with each revolution; at higher speeds the sound frequency increases beyond audibility

B. Worn front wheel bearings — the click occurs as the bearing rolls over a flattened ball or race defect once per revolution

C. The rotor lug hat has a slight irregularity that contacts the caliper dust boot once per revolution at low speeds

D. Worn brake pad anti-rattle clips — the pad shifts position once per revolution as it follows the rotor surface variations

19. A technician is diagnosing a vehicle where the brake pedal vibrates only when the vehicle is decelerating without applying the brakes — engine braking only. The vibration disappears when the brake pedal is applied. No brake noise or pulling is reported. Which of the following is MOST likely the cause?

A. A worn front CV joint creating vibration under deceleration torque reversal

B. Loose front caliper mounting bolts — during engine braking deceleration the caliper vibrates against its mounting, and applying the brakes stiffens the caliper assembly

C. Worn engine mounts — the engine rocks under deceleration torque reversal and the movement is felt through the firewall as a pedal vibration

D. Brake pad knock-back — the front brake pads are being pushed away from the rotor surface by rotor lateral runout during coast (non-braking) rotation, requiring the initial pedal travel to re-extend the pistons against the displaced pads. The vibration is the pads rattling against the rotor during this non-contact coast rotation

20. A vehicle is equipped with both vacuum brake boost and ABS. The battery went dead and was jump-started. After the jump-start, both the ABS warning light and the brake warning light are illuminated. The pedal feels normal. Which of the following BEST explains both lights being on immediately after a jump-start?

A. The jump-start voltage spike damaged both the ABS module and the pressure differential valve simultaneously

B. Jump-starting often exposes the vehicle to voltage spikes above 16 volts — both the ABS module and the brake warning light pressure switch have voltage-sensitive circuits that triggered fault illumination from the overvoltage event

C. The ABS module performs a self-test after power restoration — it may store a temporary low-voltage code from the dead battery event, and the brake warning light may illuminate if the pressure differential valve was disturbed during the jump-start procedure. Both codes should be cleared and the vehicle retested before further diagnosis

D. The battery went dead because of a brake system electrical fault — the fault caused both warning lights to remain on and drain the battery

21. Which of the following BEST describes why ESC is considered a more comprehensive active safety technology than ABS alone?

A. ESC provides faster brake pressure cycling than ABS — it can modulate brakes 20 times per second compared to ABS's 15 times per second

B. ESC incorporates ABS function as a subset and extends stability control beyond braking into active yaw management — preventing the vehicle from spinning or plowing off the road during cornering and emergency maneuvers, not just preventing wheel lockup during straight-line stops

C. ESC provides hydraulic braking force multiplication that ABS cannot achieve — it generates higher peak braking forces during emergency stops

D. ESC controls engine braking as well as hydraulic braking — ABS only controls hydraulic pressure while ESC also manages engine torque during all deceleration events

22. A vehicle comes in with a noise complaint — a grinding sound heard from the right front that occurs during braking but not during normal driving. The noise is most pronounced during initial brake application and fades as the stop progresses. The front brake pads are above minimum thickness. Which of the following is MOST likely the cause?

A. A loose caliper mounting bolt that tightens under hydraulic force as pedal pressure increases — explaining why the noise fades as brake pressure builds

B. A small stone or debris embedded in the brake pad friction material — it grinds against the rotor surface at initial brake contact and is progressively ground down or expelled during the stop

C. An air bubble in the right front hydraulic circuit — the pressure variation during initial application creates a noise-producing vibration in the caliper

D. The right front rotor has hard spots — the grinding is from the harder material resisting the pad contact during initial application

23. A vehicle with ABS has experienced several hard ABS stops during an emergency. After the emergency, the customer reports the ABS warning light is now illuminated and the pedal feels slightly lower than before. The technician retrieves a DTC for ABS pump motor current draw. A scan tool activation test confirms the pump motor operates but draws significantly more current than specified. No external fluid leaks are present. Which of the following MOST likely explains both findings?

A. The ABS pump motor is failing — higher current draw indicates worn brushes or bearing friction in the motor. The repeated hard stops caused the motor to work excessively and accelerated its wear

B. The emergency ABS activations overheated the HCU — thermal expansion of the solenoid valve bodies is causing the pump to work harder against greater internal resistance

C. The brake fluid has vaporized in the HCU from the heat of repeated hard stops — the pump is drawing more current because it is compressing vapor rather than circulating fluid

D. The ABS pump motor check valve has failed — the motor is pumping against a failed check valve and drawing more current while the accumulated air from the failed check valve has lowered the pedal

24. A technician is diagnosing an ESC fault on a vehicle. The scan tool shows the yaw rate sensor reading minus 12 degrees per second while the vehicle is traveling in a straight line at 30 mph on a flat road. The steering angle sensor shows 0 degrees. Technician A says the vehicle is actually turning to the left while the driver perceives it to be going straight. Technician B says the yaw rate sensor is producing an incorrect reading — it may require replacement or recalibration. Who is correct?

A. Technician A only

B. Both Technician A and Technician B

C. Technician B only

D. Neither Technician A nor Technician B

25. A vehicle without ABS is brought in after the customer locked the brakes during an emergency stop and the right front wheel left a skid mark considerably shorter than the left front skid mark. The vehicle pulled to the right during the stop. All brake components appear serviceable after inspection. Which of the following is MOST likely the cause?

A. The left front brake pad has a higher friction coefficient than the right — generating more braking force on the left and causing the pull to the right

B. The right front tire had significantly less tread than the left front tire — the right tire reached its traction limit at a lower braking force and locked sooner

C. The right front caliper was applying more force than the left — locking the right front wheel sooner and pulling the vehicle toward the right

D. The master cylinder delivered more hydraulic pressure to the right front circuit than the left — causing earlier right front lockup

26. A technician is preparing to replace all four brake pads and rotors on a vehicle. The technician removes the front right caliper, removes the pads, and retracts the piston with a C-clamp. However, when reinspecting the caliper bore before installing new pads, a small amount of brake fluid is visible seeping around the piston dust boot at the boot-to-caliper body junction. Which of the following is the correct service action?

A. Reinstall the pads and resume the brake job — a small amount of fluid visible near the boot is normal during piston retraction

B. Replace the caliper — fluid seeping at the dust boot-to-caliper junction indicates the caliper piston seal has failed. A leaking caliper piston seal requires caliper replacement

C. Install a new dust boot — the boot seal is leaking and can be replaced independently of the caliper assembly

D. Apply brake system sealant to the boot-to-caliper junction and complete the pad installation — the sealant will stop the seepage

27. A vehicle has been stored for 18 months. Upon returning it to service, the technician inspects the brake system and finds the rear drum brakes are seized — the drums cannot be rotated by hand and require considerable force with a rubber mallet to free them. After freeing the drums, the brake shoes and drum surfaces show significant rust transfer. The shoe linings appear intact but the friction surfaces are deeply oxidized and pitted. Which of the following is the correct service action?

A. Clean the drum interior and shoe surfaces with brake wash solvent and return to service — the rust will clear with normal use

B. Replace the rear brake shoes — the pitted and oxidized friction surfaces will have unpredictable friction characteristics. Inspect and resurface the drums if within specification, or replace if above maximum diameter

C. Replace only the brake drums — the shoe linings are intact so they do not require replacement

D. Leave the components in service — brake components always require a break-in period after extended storage

28. A vehicle has a condition where the brakes pull to the right during light brake applications but the pull decreases and disappears during moderate or hard brake applications. Which of the following BEST explains why the pull is only present at light pedal pressure?

A. The left front caliper piston seal is leaking — at light pressure the leak is significant; at higher pressure the seal seats more firmly

B. The right front brake pad has greater friction at low temperatures that decreases as braking heat is generated

C. The right front flexible brake hose has a partial internal restriction — at light brake pressure the restriction causes a pressure imbalance (right front receives pressure more slowly than left), creating momentary right-side braking advantage. At higher pressures the restriction is overwhelmed and pressure equalizes

D. The metering valve releases at different thresholds for each side of the front circuit — the imbalance only appears during the initial hold-off range

29. A vehicle equipped with ESC develops an ESC fault during a battery replacement. The battery was disconnected and reconnected during the replacement. The ESC and ABS warning lights illuminate after the battery is restored. No collision or brake work was performed. Which of the following is MOST likely required to restore normal operation?

A. Replacing the ESC control module — it was damaged by the power interruption during battery replacement

B. Performing a steering angle sensor calibration — the SAS may have lost its zero-point reference when battery power was interrupted, requiring recalibration before ESC can operate correctly

C. Replacing the yaw rate sensor — it requires continuous power to maintain calibration and cannot recover after a power interruption

D. Replacing the battery with the identical OEM specification battery — non-OEM batteries cause ESC calibration faults

30. A vehicle with all-wheel drive and four-channel ABS is brought in after the customer reports intermittent ABS activation during normal driving on smooth dry roads. The scan tool shows all four wheel speed sensors reading accurately during a road test. No DTCs are stored during the test. Which of the following should the technician investigate FURTHER after confirming normal sensor operation?

A. The ABS pump motor relay — an intermittent relay can activate the pump during normal driving and produce false ABS intervention

B. The brake fluid moisture content — high moisture can cause intermittent vapor pockets in the HCU solenoids that trigger false activations

C. Drivetrain binding — on AWD vehicles, drivetrain binding or a failing transfer case can cause slight wheel speed differences between axles that the ABS module interprets as impending lockup and activates ABS during normal driving

D. The proportioning valve — intermittent proportioning valve closure generates pressure spikes that trigger ABS activation

31. A vehicle with rear drum brakes is being inspected. The technician measures the rear drum inside diameter and finds it is exactly at the maximum diameter specification — not above, not below. The friction surface is smooth with no scoring. Which of the following is the correct service action?

A. Resurface the drum — a smooth drum at exactly maximum diameter is within specification for service

B. Replace the drum — at exactly maximum diameter the drum has no remaining machining allowance and has reached its service limit; it cannot be resurfaced further and should be replaced

C. Install the drum — a drum at exactly maximum is acceptable for continued service without resurfacing

D. Measure the drum again with a different micrometer — a reading at exactly maximum specification may be instrument error

32. A customer reports that the parking brake does not hold on a steep hill but holds adequately on a moderate grade. The parking brake lever has normal click count within specification. Service brakes function normally. The vehicle has rear drum brakes with a cable-actuated parking brake. Which of the following should the technician investigate FIRST?

A. The brake shoe lining thickness — worn linings generate insufficient friction for steep-grade holding

B. The cable adjuster — it may be at maximum adjustment capacity with insufficient cable tension reserve remaining

C. The rear wheel cylinder — a leaking cylinder reduces shoe application force

D. The rear drum interior — scoring on the drum surface reduces shoe-to-drum friction contact area

33. A vehicle is being diagnosed for a spongy brake pedal. All four brake corners have been individually isolated and confirmed free of internal leaks. The brake system has been bled three times. Each bleed confirms a firm pedal immediately after bleeding but the pedal returns to spongy after 30 minutes of rest. No external fluid leaks are found at any time. Which of the following MOST likely explains the recurring sponginess after rest?

A. Air is continuously entering the system through a micro-crack in a rigid brake line that allows air ingestion at rest when pressure drops to zero

B. A failed master cylinder check valve is allowing fluid and air to exchange between the reservoir and the circuit when the system is depressurized at rest

C. The caliper piston seals are allowing very slow internal fluid bypass when the system is unpressurized — the pedal firms up when pressurized but the seals bypass enough air and fluid during rest periods to create sponginess

D. Brake fluid is slowly converting to vapor in the calipers at ambient temperature — the vapor forms during rest and is purged by each bleed cycle but reforms within 30 minutes

34. A vehicle with ABS has a complaint where the ABS activates normally and correctly during emergency stops — but after the ABS activation is complete the brake pedal does not return to its normal height for several seconds. It stays low for 5 to 10 seconds before slowly rising to normal height. No DTCs are stored and ABS function is confirmed normal otherwise. Which of the following MOST likely explains the delayed pedal return after ABS activation?

A. The ABS pump motor is running longer than necessary after the stop — continuing to circulate fluid that keeps the pedal depressed

B. Air in the HCU accumulator is being slowly expelled through the solenoid valves after the stop — the pedal height recovers as the accumulator drains

C. The ABS return pump is pumping fluid back from the low-pressure accumulator to the master cylinder after the ABS activation ends — the fluid return raises pedal height progressively as the accumulator empties. This is normal ABS system behavior after an activation event

D. The ABS outlet valve solenoids are sticking in the partially open position after activation — they slowly close over 5 to 10 seconds, gradually returning pedal height to normal

35. A technician is performing maintenance on a vehicle with an electric parking brake (EPB) and learns the vehicle is due for a parking brake cable adjustment. The vehicle has an EPB with no mechanical cable — the parking brake is actuated entirely by the electric motor in the caliper. Which of the following is the correct response?

A. The cable adjustment is performed by tightening the rear caliper slide pin bolts — this changes the caliper position relative to the rotor and effectively adjusts cable tension

B. No cable adjustment is possible or needed — the EPB system has no mechanical cable. The EPB motor position is calibrated through a scan tool initialization procedure that establishes the correct motor position for the current pad thickness

C. The parking brake adjustment is performed by adjusting the drum-in-hat shoe star wheel — which is present on all EPB vehicles as a backup cable system

D. The EPB module self-adjusts continuously — no technician-performed adjustment is ever needed for the system lifetime

36. A vehicle comes in after the customer reports the ABS system activates unexpectedly during normal slow parking lot maneuvers at speeds below 5 mph. Road testing confirms ABS activates during gentle 2-3 mph parking maneuvers when the steering wheel is turned sharply. No DTCs are stored. Which of the following is MOST likely the cause?

A. The ABS module has failed and is activating randomly — replacement is needed

B. The inside front wheel speed during a sharp low-speed turn reduces significantly due to the small turning radius — the ABS module may incorrectly interpret this as a lockup event

C. A wheel speed sensor on the inside wheel of the turn is failing — it reads zero during turns and triggers ABS

D. The vehicle's tire size has been changed — the larger tires produce wheel speed readings below the ABS minimum detection threshold during parking

37. A vehicle with drum rear brakes has the rear self-adjusters advancing correctly but the customer still reports the parking brake requires more lever travel than the specification. All other brake components are within specification. Which of the following is MOST likely the cause?

A. The service brake shoes are contaminated — contaminated shoes cannot properly transmit force to the parking brake mechanism

B. The parking brake cable has stretched beyond the range that the adjuster can compensate — the cable requires replacement

C. The rear drums are worn to near-maximum diameter — the increased drum diameter requires more shoe travel to contact the drum surface during parking brake application

D. The drum brake automatic adjusters have been over-advancing the shoes and there is now zero running clearance — the shoes are binding during parking brake application

38. A vehicle with ABS is being serviced after the scan tool retrieved a DTC for ABS motor relay open circuit. The relay is tested using a multimeter and found to have correct coil resistance and contacts that close properly when the relay is energized. The motor operates normally when power and ground are applied directly. Which of the following is MOST likely the cause of the DTC?

A. The ABS module internal relay driver transistor has failed — it is unable to energize the relay coil

B. The relay socket has a high-resistance connection — poor contact at the relay socket terminal causes a voltage drop that the ABS module detects as an open circuit condition

C. The ABS module power supply fuse has blown — the module cannot detect relay operation without power

D. The motor ground connection is corroded — poor ground at the motor produces the open circuit code even when the relay is functioning

39. A technician is advising a customer about upgrading to high-performance brake pads for track driving. The customer currently drives a sport sedan on the street daily and at the track occasionally. Which of the following represents the MOST balanced technical guidance?

A. High-performance track pads are always superior — install them on all four corners for maximum stopping power in all conditions

B. High-performance track pads typically require elevated operating temperatures to reach their optimal friction range — on the street they may be in a temperature range below their effective threshold and perform worse than street-oriented pads. Dual-compound pads or separate dedicated street and track pad sets may be a better solution

C. Street pads should never be used for any track driving — even occasional track days require full race compound pads for all components

D. Brake pad performance on the track depends only on rotor condition — any pad compound performs equally well if the rotors are in good condition

40. During an ABS module replacement on a vehicle, the replacement module requires a programming procedure using a scan tool before it will function. After programming, the scan tool reports that the module requires a calibration drive cycle — the vehicle must be driven at specific speeds and with specific braking events to complete the module's initial calibration. After the calibration drive cycle, the ABS and ESC warning lights extinguish and the system functions normally. Why was this process required?

A. The replacement ABS module has different hardware than the original — the programming procedure matches the new hardware to the vehicle's electrical architecture

B. The replacement ABS module is a universal module that requires vehicle-specific VIN programming to activate its full feature set, and the calibration drive cycle allows the module to learn the vehicle-specific wheel speed sensor characteristics, baseline yaw parameters, and sensor offsets before it can safely manage active stability interventions

C. The calibration drive cycle is required by law before any safety-critical module can be returned to service — it verifies the repair meets regulatory standards

D. The programming procedure simply transfers the old module's fault code memory to the new module — preventing previous faults from reappearing after replacement

41. A vehicle has a left rear wheel speed sensor that consistently reads 2 mph lower than the other three sensors during steady-speed highway driving. The ABS is not activating. No DTC is stored. The tone ring and sensor mounting are confirmed intact. Which of the following MOST likely explains the consistent 2 mph lower reading?

A. The left rear tire is overinflated — the larger effective rolling radius causes slower rotation and lower speed reading

B. The left rear tire is underinflated or worn more than the other tires — a smaller effective rolling diameter causes the wheel to rotate faster, but the speed sensor reads a lower than actual vehicle speed when the rolling radius is smaller than the assumed calibration value

C. The left rear wheel bearing has beginning stages of wear — the bearing play slightly reduces effective tire contact patch rolling speed

D. The left rear tone ring was installed with slightly more than the specified number of teeth — the additional teeth cause the sensor to calculate a higher rotation frequency, paradoxically reading a lower vehicle speed

42. A vehicle with a Hydro-Boost brake system and power-assisted steering has a condition where hard braking during sharp cornering causes both the brakes and the steering to temporarily lose assist. Which of the following BEST explains this condition?

A. The brake and steering systems are accidentally cross-connected — the brake system is drawing pressure from the steering circuit

B. Both the steering and braking systems compete for the same power steering pump output — during simultaneous maximum demand events the pump cannot supply adequate pressure to both systems and both experience reduced assist

C. The Hydro-Boost unit has an internal priority valve that directs all pump pressure to the brake system during hard braking, removing assist from the steering temporarily

D. The power steering rack has an internal leak that diverts pressure from the Hydro-Boost circuit during sharp cornering

43. A vehicle is being inspected for a brake service interval recommendation. The vehicle has 95,000 miles and the brake fluid has been changed once at 45,000 miles. Current moisture content tests at 1.2%. All brake components are above minimum specification. Which of the following is the MOST appropriate service recommendation?

A. No service needed — the vehicle is 50,000 miles since last fluid service and 1.2% moisture is well within acceptable range

B. Replace the brake fluid now — 50,000 miles since the last fluid change is sufficient interval regardless of moisture content to warrant preventive replacement

C. The brake fluid does not require replacement — 1.2% moisture is the only valid criterion and it is well below the 3% threshold

D. Replace the front brake pads — at 95,000 miles the front pads are certainly due for replacement regardless of measurement

44. A customer asks why their vehicle's ABS sometimes makes a moaning sound from under the hood when they step on the brake pedal firmly, even though they are not stopping hard enough to activate ABS. The ABS warning light is off and the brakes function normally. Which of the following BEST explains this sound?

A. The ABS pump motor is activating during firm brake applications to pre-charge the accumulator — the motor moaning indicates normal pre-charge operation

B. The ABS pump motor is failing — a failing motor produces a moaning sound during any electrical energization

C. The hydraulic control unit solenoid valves produce a low-frequency resonance during firm brake applications that is transmitted through the firewall — this is normal HCU behavior under high-pressure conditions

D. The vacuum booster is drawing more vacuum at firm pedal applications and the increased vacuum flow produces a low-frequency moaning in the check valve

45. A technician completes a full brake service including new pads, rotors, complete brake bleed with scan tool solenoid actuation, and burnishing procedure on a vehicle with ABS and EPB rear brakes. The EPB initialization was performed after the rear brake service. All four pedal evaluation tests confirm normal. The ABS and ESC warning lights are off. No codes are stored. The parking brake holds the vehicle correctly on a 15% grade. Which of the following BEST describes the appropriate conclusion before returning the vehicle?

A. Perform one additional complete brake bleed — scan tool bleeds always require a confirming manual bleed within 24 hours

B. Road test the vehicle one final time at normal driving speeds with several moderate brake applications to confirm no abnormal noise, no pulling, and normal pedal feel throughout the speed range before returning the vehicle to the customer

C. Re-torque the EPB motor mounting bolts after the initialization procedure — initialization can back off the motor mounting hardware slightly

D. Verify the brake fluid level is at the minimum mark — a brake system with new thicker pads should have the fluid slightly below maximum

PRACTICE EXAM 10: ANSWER KEY AND EXPLANATIONS

1. C. Brake fluid draining back to master cylinder by gravity during overnight rest — On vehicles where the master cylinder is mounted lower than some or all of the wheel braking units, or where slight cup seal relaxation allows fluid movement when the system is depressurized, fluid gradually returns from the calipers/wheel cylinders toward the master cylinder. This leaves the pistons slightly retracted from the pads. The first two to three pedal strokes re-extend all pistons back to contact position before normal hydraulic pressure builds. This condition worsens as cup seals age.

2. C. Booster diaphragm has a small leak — During a static pedal hold, the booster should maintain its vacuum — the check valve prevents vacuum from returning to the manifold and the pedal hold does not require additional vacuum draw. A vacuum reading that drops during a sustained pedal hold indicates that vacuum is escaping through a leak within the booster itself — most likely a diaphragm with a small hole or crack that allows vacuum to leak into the atmosphere side of the booster.

3. B. Diagonal split maintains one front and one rear braking — more balanced partial failure — In a diagonal split design, one circuit serves right front + left rear and the other serves left front + right rear. Any single circuit failure always leaves one front and one rear wheel braking. The resulting deceleration force is balanced diagonally across the vehicle — preventing the severe front or rear braking dominance that would result from a front/rear split failure. The vehicle is less likely to pull severely to one side during a partial circuit failure.

4. B. Star wheel adjusted too tightly during initial manual adjustment — The most direct cause of a newly serviced drum brake dragging with shoes contacting the drum at rest is incorrect initial manual adjustment. Setting the star wheel too tight during the assembly phase positions the shoes too close to the drum from the start — the drum cannot be installed without excessive force, and once installed the shoes immediately produce drag. The star wheel must be backed off to restore clearance.

5. A. Vacuum booster internal pushrod length — With normal vacuum supply confirmed and the master cylinder confirmed functional, the booster's mechanical force transfer to the master cylinder is the next diagnostic area. The internal pushrod length in the booster must be correctly adjusted to efficiently transfer diaphragm force to the master cylinder piston. A pushrod adjusted too short creates a gap between the booster output and the master cylinder input — the braking force multiplied by the booster diaphragm is not fully delivered to the hydraulic circuit.

6. B. Wrong brake pad compound with temperature range too low — A recurring pattern of new pads glazing within weeks despite correct installation indicates the pads are being operated beyond their upper temperature limit for an extended period each time. The friction material binders soften and the surface vitrifies — creating the hard, mirror-like glaze. Selecting a pad compound with higher heat tolerance appropriate for this vehicle's operating conditions will break the recurring cycle.

7. B. Brake shoe lining contact not centered on drum width — A polished ring at one specific circumference of the drum interior indicates the shoe lining is contacting only a narrow band of the drum width rather than the full drum face. This suggests the shoe is positioned at an angle, the shoe is the wrong size for the drum, or the shoe anchoring geometry is incorrect — causing the lining to contact one edge of the drum rather than distributing contact evenly across the full friction surface width.

8. B. Seized caliper piston holding pad in light contact — squeal stops under firm pressure — A caliper piston that cannot fully retract holds the brake pad in continuous light contact with the rotor. This low-load continuous contact produces a resonant squeal at rotational frequencies during driving that stops when the brakes are firmly applied — because firm application changes the contact geometry and friction dynamics that were producing the resonance. This is the classic presentation of a dragging caliper piston with light continuous pad contact.

9. B. Rear brake line disturbed during cable routing — air introduced — On some vehicles, parking brake cable routing passes close to or through areas where rear brake lines are located. During cable replacement, if a rear brake line fitting is inadvertently loosened or the line is bumped and develops a micro-crack, a small amount of air can enter the rear circuit — producing the post-service spongy pedal. The correct response is to inspect the rear brake lines that were in proximity to the cable routing during service and bleed the rear circuit.

10. C. Right rear axle seal improperly installed or wrong seal during rebuild — Gear oil found coating the drum interior and shoe linings after an axle rebuild points directly to the axle seal as the contamination source. A seal that was improperly seated during installation, installed backwards, or was the incorrect part number for this application will not effectively seal the differential lubricant from the brake area. The correct repair is to identify the axle seal failure, install the correct properly seated seal, and replace the contaminated brake shoes.

11. B. All DOT 4 fluids meet the same specification and are chemically compatible — DOT classification standards establish minimum performance requirements that all compliant brake fluids within each classification must meet. All DOT 4 fluids — regardless of brand or specific formulation — must meet the same boiling point and other performance specifications set by FMVSS 116. Glycol-based fluids of the same DOT classification are chemically compatible and can be safely mixed. This compatibility extends across the glycol family (DOT 3, 4, and 5.1).

12. B. Technician A only — Without a metering valve, hydraulic pressure reaches the front disc brakes immediately on initial pedal application — before the rear drum brake shoes have overcome their return spring resistance and begun to engage. This creates early front brake engagement during light pedal applications. Technician A correctly identifies this braking imbalance.

Technician B is incorrect — the pressure differential switch monitors circuit pressure balance between the two independent circuits, not the application timing between front and rear. Missing the metering valve does not trigger the pressure differential switch.

13. B. Return tubes need to be submerged deeper in fluid — When bench bleeding, the return tubing from each outlet port must have its end submerged beneath the fluid surface in the reservoir to prevent the same air bubble from being drawn back in with each piston return stroke. If one tube end is above the fluid level or only marginally below, the piston retraction creates suction that draws the same air bubble back into the bore rather than drawing fresh fluid from the reservoir. Lengthening the return tubes to ensure deep submersion corrects this problem.

14. B. Overnight moisture on rotor surface — squeak during first reverse rotation — Ambient humidity deposits a thin film of moisture on exposed rotor friction surfaces during overnight parking. The first wheel rotation — even without brake application — moves the brake pad across the moist rotor surface, producing a brief squeak or scrape from the moisture being pushed aside. The noise stops once the moisture is displaced from the contact area, which typically occurs within the first 5 to 10 feet of movement. This is a benign and extremely common condition.

15. B. Rotor parallelism variation amplified during ABS pressure cycling — ABS activation involves rapid, repeated pressure cycling — applying, holding, and releasing brake pressure at 8 to 15 Hz. If the rotors have significant parallelism variation, the pressure pulses from the thickness variation combine with the ABS cycling pressure pulses — producing an amplified vibration more severe than either the parallelism variation or the ABS cycling alone. Correcting the rotor parallelism variation by resurfacing or replacing the rotors will eliminate the intensified vibration while ABS continues to function normally.

16. B. Technician replaced sensor within specification — fault is in wiring or tone ring — The diagnostic error is replacing the sensor without confirming the sensor was actually outside of specification. The original sensor resistance of 1,050 ohms falls well within the 900 to 1,200 ohm specification. Replacing a sensor that tests within specification and finding the identical code upon return correctly identifies the mistake — the fault was never in the sensor. The wiring circuit, connector, or tone ring should have been thoroughly inspected before any parts replacement.

17. C. Caliper pistons not fully retracted — pistons too far out — inboard pad contacts rotor at an angle — When caliper pistons are not fully retracted during pad installation, they start in a partially extended position. As the new thicker pads are installed, the already-extended piston holds the inboard pad at an angle to the rotor rather than flat. The outer edge of the inboard pad makes primary contact with the rotor — creating the scored outer edge ridge and accelerated inboard pad wear described. Full piston retraction before pad installation would have prevented this.

18. A. Stone or debris lodged between pad and rotor — clicks once per revolution — A small stone caught between a brake pad and rotor creates a mechanical impact point that produces a distinct click each time that section of rotor passes the trapped debris. At low speeds the click frequency is low and distinct — one per revolution. As speed increases the click frequency increases beyond the point where it can be perceived as a distinct sound — it becomes a high-frequency hiss that disappears into road noise above approximately 25 mph. Removing the caliper and inspecting between the pad and rotor will reveal the debris.

19. D. Brake pad knock-back — pads pushed away from rotor by lateral runout — Brake pad knock-back occurs when front rotor lateral runout pushes the brake pads away from the rotor surface during non-braking rotation. As the rotor's high spot passes the stationary pad, it pushes the pad inward, retracting the caliper piston slightly. When the brakes are applied, the first pedal travel must re-extend this pushed-back piston before contact occurs. During engine braking coast, the pads rattle slightly against the rotor as the runout creates alternating contact and separation — producing the vibration felt in the pedal during coast but not during braking.

20. C. Clear codes and retest — post-jump-start warning lights are common and often temporary — Jump-starting a vehicle exposes all electronic modules to potential voltage spikes and very low voltage during the cranking event. The ABS module may store a temporary low-voltage fault from the dead battery, and the brake warning light may illuminate for multiple reasons that are not true brake system faults. Clearing all codes and performing a complete system retest after confirming all systems are operating normally is the correct first step — many post-jump-start warning lights represent stored but non-current faults.

21. B. ESC incorporates ABS and extends to yaw management during cornering — ABS prevents wheel lockup during braking events — an important but narrow application. ESC incorporates ABS as one component of a broader stability management system. ESC additionally manages vehicle yaw through selective braking during cornering, emergency maneuvers, and low-traction events where the vehicle might otherwise spin, plow, or deviate from the driver's intended path. ESC addresses vehicle dynamics in two axes (braking + yaw) while ABS addresses only one (braking deceleration).

22. B. Stone or debris embedded in pad friction material — Debris that has become embedded in the brake pad friction material — stone chips, brake pad fragments, rotor debris — creates a hard point that grinds against the rotor surface at initial brake contact. As the stop progresses and braking heat and pressure build, the debris is either ground smaller or expelled from the pad — causing the noise to fade during the stop. Removing the pad and carefully inspecting the friction surface for embedded material confirms this diagnosis.

23. A. ABS pump motor failing — repeated hard stops accelerated wear — High current draw at the ABS pump motor with confirmed motor operation indicates increased resistance within the motor itself — most commonly worn brushes, worn armature windings, or excessive bearing friction from wear. The repeated hard ABS stops during the emergency demanded maximum pump motor operation — accelerating the degradation of an already-wearing motor. The lower pedal is consistent with the pump motor working less efficiently — it cannot return fluid from the accumulator to the master cylinder as effectively, leaving the accumulator partially full after ABS activation and keeping the pedal slightly lower.

24. C. Technician B only — A vehicle traveling in a straight line at 30 mph should have a yaw rate of approximately zero — no rotation around its vertical axis. A yaw rate of minus 12 degrees per second on a straight road with zero steering angle input indicates the sensor is providing incorrect data. Either the sensor requires recalibration to establish its zero reference point, or the sensor has failed. Technician B correctly identifies the sensor reading as incorrect. Technician A is incorrect — the vehicle cannot be turning at 12 degrees per second while the driver perceives straight-ahead travel at 30 mph.

25. B. Right front tire with significantly less tread — reached traction limit first — Tires with less tread depth have reduced ability to generate lateral and longitudinal grip — particularly during emergency braking. A tire with significantly less tread than its partner on the same axle will reach its maximum braking friction and lock sooner during emergency stops. The shorter right front skid mark confirms the right tire locked sooner — after locking, a sliding tire decelerates less effectively than a rolling tire near its traction limit, and the vehicle pulls toward the locked side.

26. B. Replace the caliper — piston seal has failed — Fluid seeping at the junction of the dust boot and caliper body indicates that hydraulic pressure has overcome the piston seal and fluid is finding its way past the seal, behind the piston, and out through the dust boot area. This is a piston seal failure — the caliper is internally leaking. A leaking caliper piston seal is a safety-critical failure that requires caliper replacement. Installing new brake pads on a caliper with a failed piston seal is not appropriate.

27. B. Replace rear brake shoes — inspect and service drums — Severely oxidized and pitted brake shoe friction surfaces from 18 months of corrosion cannot be expected to provide predictable, consistent friction. The friction coefficient of heavily corroded lining material is unpredictable — it may grab initially then fade, or provide inconsistent pedal feel. Replace the rear shoes with new units. The drums should be inspected for diameter specification compliance and resurfaced if within specification (to remove the rust transfer and restore a smooth friction surface) or replaced if at or beyond maximum diameter.

28. C. Partial right front hose restriction — pressure arrives slowly at low pedal input — An internal restriction in the right front flexible hose acts as a flow resistor. At low brake pedal pressure, fluid flow rate is low — and the restriction causes right front caliper pressure to build faster than left front because a small but significant pressure differential develops across the restriction. The right front caliper applies first at light pedal inputs, pulling the vehicle right. As pedal pressure increases, flow through both sides increases to the point where the restriction is no longer rate-limiting and pressures equalize — the pull disappears.

29. B. Steering angle sensor calibration — Battery disconnection is the most common trigger for SAS calibration loss on vehicles where the SAS stores its zero-point reference in volatile memory. Without a valid zero-point calibration, the ESC module cannot calculate the driver's intended direction and disables itself. Performing a steering angle sensor calibration procedure using a scan tool — which typically involves driving the vehicle briefly in a straight line and turning the wheel through a specified range — restores the reference and extinguishes the warning lights.

30. C. Drivetrain binding or failing transfer case on AWD vehicle — On AWD vehicles, the drivetrain must allow slight speed differences between front and rear axles during normal cornering. A binding transfer case, failing center differential, or incorrectly calibrated AWD system that prevents these speed differences will produce slight but consistent wheel speed discrepancies between axles. The ABS module, monitoring all four wheel speeds, may interpret the drivetrain-induced speed differences as impending lockup and activate ABS during normal driving — particularly during cornering where natural front/rear speed differences are greatest.

31. B. Replace the drum — at maximum diameter, no remaining machining allowance — Maximum diameter is the outer limit of acceptable service — not a target to work toward or a measurement that permits continued use. A drum at exactly maximum diameter has exhausted its machining allowance. Resurfacing would take the drum above maximum. Installing the drum as-is at exactly maximum means it is already at the replacement threshold. The correct service action is replacement.

32. A. Brake shoe lining thickness — With normal lever travel (click count within specification) but insufficient holding force on steep grades, the parking brake mechanical system is transmitting force correctly — the problem is at the friction interface. Worn brake shoe linings have both reduced thickness and reduced effective friction contact area. Thin linings generate less clamping force against the drum for the same cable tension — adequate for moderate grades but insufficient for steep grades. Lining inspection is the first step.

33. A. Air entering through micro-crack when system is depressurized — A pedal that firms up with each bleed but returns to spongy after 30 minutes of rest — with no external leaks and all internal components confirmed sealed — indicates a micro-defect that allows air entry specifically when the system is at rest and pressureless. A micro-crack in a rigid brake line, particularly at a corroded section, may be too small to leak fluid outward under pressure but large enough to admit air inward when the system depressurizes and hydraulic pressure drops below atmospheric. This would explain the recurring cycle of firm-after-bleed followed by spongy-after-rest.

34. C. ABS return pump transferring fluid from accumulator back to master cylinder — normal behavior — After an ABS activation event, brake fluid that was released to the low-pressure accumulator during pressure decrease phases must be returned to the master cylinder circuit. The ABS return pump continues to run for a brief period after the stop completes — pumping this accumulated fluid back from the accumulator through the solenoid valves to the master cylinder. This fluid return progressively raises hydraulic pressure in the circuit and the brake pedal rises with it over 5 to 10 seconds. This is normal post-ABS-activation system behavior.

35. B. No cable exists — EPB initialization via scan tool only — Fully electronic EPB systems with in-caliper motors have no mechanical cable whatsoever. There is nothing to adjust mechanically. The only "adjustment" that exists for these systems is the scan tool EPB initialization or calibration procedure — which commands the EPB motors to retract and extend through a learning sequence, establishing the correct motor position reference for the current pad and rotor dimensions. This procedure must be performed after any rear brake service affecting pad thickness.

36. B. Inside wheel turning radius reduction produces apparent speed drop that ABS interprets as lockup — During sharp low-speed turns, the wheel on the inside of the turn travels a much smaller radius than the outside wheel — the inside wheel rotates more slowly relative to vehicle speed. At very low speeds (2 to 3 mph) and very sharp turn angles, the inside wheel's speed can drop enough relative to vehicle speed that the ABS module's deceleration threshold is exceeded. The module interprets this as impending lockup and activates — producing the unexpected ABS engagement during parking maneuvers.

37. B. Parking brake cable stretched beyond adjustment range — The parking brake cable adjuster has a finite range of adjustment. If the cable inner wire has stretched significantly over the vehicle's life, the adjuster may have been incrementally tightened to its maximum thread engagement without restoring proper cable tension. At maximum adjuster travel the cable is still too loose for correct lever travel. The cable requires replacement to restore adjustment range.

38. B. High-resistance connection at relay socket — A relay socket with oxidized contacts or corrosion at the terminal-to-socket interface introduces resistance into the relay power circuit. The ABS module powers the relay through this circuit and monitors the current return. When resistance at the socket causes a voltage drop, the module detects the drop as an open circuit condition — even though the relay itself is intact and the motor operates normally when powered directly. Cleaning or replacing the relay socket corrects this high-resistance connection.

39. B. Track pads require elevated operating temperature — may perform worse on the street — High-performance track brake pads are formulated to provide optimal friction at the elevated temperatures generated by aggressive track braking — temperatures that rarely occur during normal street driving. At street operating temperatures these compounds may provide less friction than standard street pads — creating a longer stopping distance in normal driving conditions. The recommendation is a dedicated track pad set for track days while maintaining appropriate street pads for daily driving, or dual-compound pads designed to perform acceptably across both temperature ranges.

40. B. Module requires vehicle-specific calibration to learn sensor characteristics and baseline parameters — Modern ABS/ESC control modules are sophisticated computing systems that maintain learned calibrations for wheel speed sensor characteristics, baseline yaw measurements, and sensor offset corrections specific to each vehicle. A replacement module arrives without these vehicle-specific learned values. Programming provides the VIN and configuration data; the calibration drive cycle allows the module to measure and learn the vehicle's specific sensor outputs and establish baseline stability parameters before performing safety-critical stability interventions.

41. B. Left rear tire underinflated or worn — smaller rolling diameter causes lower speed reading — An underinflated or more-worn tire has a smaller effective rolling radius than properly inflated or less-worn tires. A smaller rolling radius means the wheel must rotate faster to cover the same ground distance — but the ABS module calculates vehicle speed by counting wheel rotations per unit time and multiplying by the assumed rolling circumference. If the actual rolling circumference is smaller than assumed, the calculated speed is lower than actual. The consistently lower reading indicates the left rear tire's rolling diameter is smaller than calibrated.

42. B. Both systems compete for same pump output during simultaneous maximum demand — The Hydro-Boost unit and the power steering rack share the same power steering pump. When the driver simultaneously applies maximum brake force and maximum steering force — such as during emergency hard braking in a sharp corner — both systems demand maximum pump output simultaneously. Most power steering pump designs cannot supply peak flow for both systems at the exact same moment — both functions experience momentary reduced assist during the combined peak demand period.

43. B. Replace brake fluid — 50,000 miles is sufficient interval for preventive replacement — While the 1.2% moisture content is well below the 3% replacement threshold, the vehicle is 50,000 miles and approximately 4 to 5 years since its last fluid service. At this service interval, preventive fluid replacement is appropriate regardless of moisture reading — especially on a 95,000-mile vehicle. Moisture content testing gives a snapshot of current degradation but does not capture the cumulative heat cycling, oxidation, and pH changes the fluid has undergone over 50,000 miles. Preventive replacement at this interval is sound maintenance practice.

44. D. Vacuum booster check valve flow noise at firm pedal applications — The vacuum booster check valve controls the vacuum supply to the booster. Under firm brake applications, the booster demands significant vacuum flow from the manifold — this rapid vacuum flow through the check valve can produce a low-frequency moaning or rushing sound that is transmitted through the vacuum hose and firewall into the passenger compartment. This is a normal operational sound under firm pedal applications and does not indicate any system malfunction.

45. B. Final road test at normal speeds with moderate brake applications before customer return — After all service procedures are confirmed complete — new components, complete bleed with scan tool actuation, burnishing, EPB initialization, warning lights clear, parking brake confirmed functional — the final quality verification before customer return is a comprehensive road test. Moderate brake applications at normal driving speeds verify brake balance (no pulling), confirm absence of abnormal noise, and validate normal pedal feel across the full speed range under conditions that better simulate real-world use than shop-floor pedal testing alone.