

PRACTICE EXAM 8: 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 has a brake pedal that slowly descends to the floor under steady foot pressure over about 30 seconds. No external brake fluid leaks are found. Pumping the pedal does not improve the condition — it sinks again under sustained pressure after every application. Which of the following is MOST likely the cause?

- A. Air in the brake hydraulic circuit
- B. A failed vacuum booster diaphragm causing inconsistent assist
- C. An internally bypassing master cylinder primary cup seal
- D. A plugged master cylinder compensating port

2. A vehicle with a vacuum brake booster has an intake manifold vacuum of 19 in-Hg at idle — within specification. However, the brake pedal is hard and requires excessive effort. The vacuum supply hose and check valve are confirmed functional. Which of the following is MOST likely the cause?

- A. The vacuum booster diaphragm or internal control mechanism has failed — adequate vacuum supply combined with hard pedal indicates an internal booster fault
- B. The master cylinder pushrod is too short — insufficient pushrod engagement reduces the conversion of booster force to hydraulic pressure
- C. The brake fluid has thickened from moisture absorption — increased viscosity requires greater pedal effort to pump fluid through the circuit
- D. The master cylinder bore is oversized — a large bore requires more force to generate adequate pressure

3. A vehicle is being inspected after a customer complains the parking brake light stays on continuously while driving. The parking brake lever is confirmed fully released. The brake fluid level is at the correct mark. No brake system faults have occurred. Which of the following should the technician inspect FIRST?

- A. The red brake warning light bulb — it may be wired to the parking brake circuit and illuminating from a separate fault
- B. The parking brake warning switch and switch actuating mechanism — the switch may not be opening fully when the lever is released due to sticking or misadjustment
- C. The pressure differential valve — a displaced spool activates the same red warning light circuit
- D. The master cylinder reservoir float switch — it may be erroneously triggering the light through a shared wiring path

4. A customer's vehicle was just returned after a complete brake job performed by another shop. The customer brings the vehicle back complaining that during the first hard stop after pickup, the pedal went to the floor and braking was minimal. After stopping the vehicle, the pedal pumped up on subsequent applications. Which of the following is MOST likely the cause?

- A. Both front calipers failed simultaneously — a manufacturing defect in new calipers occasionally causes dual failure
- B. The brake fluid was not replaced during the brake job — old contaminated fluid caused a sudden boiling event
- C. The brake system was not properly bled after the brake job — significant air in the system caused the initial floor pedal. Pumping displaced the air enough for partial pressure to build
- D. The parking brake was set during the brake job and it was not released before the vehicle was driven — the rear brakes were locked on the first application

5. A vehicle with rear disc brakes has new pads installed. The technician pushed the caliper pistons inward using a C-clamp to create clearance for the thicker new pads. After installation, the technician notices the master cylinder reservoir is overflowing with brake fluid. Which of the following BEST explains the overflow?

- A. The new brake pads are thicker than expected — the excess thickness displaced more fluid volume than the reservoir could accommodate
- B. The reservoir was already at the maximum level before piston retraction — pushing the pistons inward displaced the fluid from the calipers back through the lines to an already-full reservoir causing overflow
- C. The C-clamp cracked the caliper body during piston retraction — fluid is leaking into the reservoir through an internal crack

D. The bleeder screws were open during piston retraction — fluid flowed backward through the bleeder ports into the reservoir

6. A technician is asked to diagnose a vehicle with a complaint of the front end shaking during braking. The vibration is felt in the steering wheel and seat. The steering wheel vibration is significantly more pronounced than the seat vibration. Which of the following is MOST likely the source?

A. Rear rotor parallelism variation — rear brake pulsation primarily transmits through the chassis to the seat

B. Front rotor parallelism variation — front caliper pulsation transmits through the steering knuckle and linkage to the steering wheel

C. A failing front wheel bearing — the additional braking load reveals bearing play that produces vibration felt throughout the vehicle

D. Rear drum brake imbalance — a loose rear shoe contacts the drum unevenly and produces vibration felt through the chassis

7. A vehicle with duo-servo rear drum brakes is inspected and the automatic adjuster is found to be advancing the star wheel whenever the vehicle is driven forward — not just in reverse or when braking in reverse. Which of the following is MOST likely the cause?

A. The adjuster is functioning correctly — duo-servo adjusters advance during any braking event to compensate for lining wear

B. The adjuster lever and cable are installed incorrectly for a duo-servo system — the activation direction has been reversed, causing forward braking events to advance the star wheel

C. The adjuster star wheel thread is stripped — the wheel spins freely in both directions without proper engagement

D. The vehicle's primary and secondary shoes have been installed backwards — the incorrect shoe positions change how the adjuster activates

8. During a brake fluid flush, the technician drains all fluid from the system and refills with new fluid. After completing the bleed, the pedal is firm but slightly higher than normal. No external leaks are present. Which of the following MOST likely explains the slightly elevated pedal height?

A. Air remains in the hydraulic system after the flush — trapped air is compressing under application and artificially raising the pedal height

B. The new brake fluid has a slightly lower viscosity than the old fluid — it fills the circuit more completely, raising the pedal height

C. New fluid at full concentration without any moisture absorption has a slightly higher viscosity that raises the pedal height marginally

D. The flush was performed with the engine off — without vacuum assist, the pedal reaches a slightly different resting height than with the engine running

9. A technician is examining a vehicle for a brake fluid leak. Fluid is found on the inside of the right rear wheel — on the backside of the wheel rim. The fluid appears clear and slightly slippery. Which of the following is MOST likely the source?

A. The right rear wheel bearing seal — bearing grease has a similar slippery feel to brake fluid

B. The right rear caliper piston seal — a failed seal allows fluid to leak past the piston and exit through the dust boot

C. The right rear flexible brake hose fitting — a loose hose fitting allows fluid to drip onto the inside of the wheel

D. The right rear axle seal — gear oil from the differential is coating the inside of the wheel rim

10. A vehicle with a Hydro-Boost braking system has been sitting unused for 30 days. On the first drive after storage, the driver reports the brakes feel very stiff for the first two or three applications, after which they return to normal. Which of the following BEST explains this condition?

A. The power steering fluid has thickened during storage — it requires several pump cycles to return to normal viscosity and pressure output

B. The Hydro-Boost accumulator has lost its stored pressure during the 30-day storage period — the first two or three applications use non-assisted pressure until the pump restores accumulator pressure

C. The master cylinder cup seals harden during storage — several applications are needed to reseal them and restore normal piston travel

D. The power steering pump lost its prime during storage — the pump must self-prime before providing adequate pressure to the Hydro-Boost unit

11. A vehicle with front disc and rear drum brakes has a complaint of the brakes locking at all four wheels during very hard stops. No ABS is equipped. Which of the following is MOST likely the cause?

- A. Both the metering valve and proportioning valve have failed — they are no longer performing their balancing functions
- B. The proportioning valve has failed in the open (pass-through) position — full pressure is delivered to the rear brakes during hard stops causing rear wheels to lock, followed by the driver instinctively releasing the pedal causing momentary front lock
- C. This is normal brake behavior on a non-ABS vehicle during a stop that exceeds available tire traction — all four wheels locking during maximum braking is expected on vehicles without ABS
- D. The master cylinder has failed internally — it is generating pressure spikes that cause simultaneous four-wheel lockup

12. A vehicle is brought in for a complaint of a burning smell after highway driving. The technician finds the left front wheel significantly hotter than the other three wheels. The left front brake is confirmed to be dragging. The bleeder screw test reveals the drag is hydraulic. The rigid brake lines on the left front circuit are intact. Which of the following is the MOST likely cause?

- A. The master cylinder compensating port serving the left front circuit is plugged
- B. The combination valve pressure differential spool has shifted toward the left front circuit
- C. The left front flexible brake hose has an internally deteriorated liner acting as a one-way restriction
- D. The left front caliper bleed screw is not fully closed — it is releasing pressure which collapses the caliper circuit and creates drag

13. A brake drum has been measured and found to be 0.040 inch below the maximum diameter specification with no scoring or damage. The original standard diameter specification is 0.080 inch below maximum. This means the drum has been previously machined to halfway between standard and maximum diameter. Which of the following is the correct service action?

- A. Replace the drum — a drum more than 0.020 inch below standard diameter must be replaced
- B. Resurface the drum if needed — 0.040 inch below maximum means adequate material remains for service and possible future resurfacing within limits
- C. Replace the drum — once a drum has been previously machined it cannot be resurfaced again

D. Install the drum as-is — a drum between standard and maximum diameter requires no measurement or evaluation

14. A technician is performing a brake inspection and discovers that the right front brake pad backing plate has fractured — the steel backing plate has cracked and separated. The brake pad is not functioning normally. Which of the following is the correct service action?

A. Replace only the fractured pad — the opposite side pad is likely undamaged and can remain in service

B. Replace both front axle pads and inspect the caliper piston and bore for damage from the fractured backing plate before returning the vehicle to service

C. Apply epoxy adhesive to the fractured backing plate and reinstall — a bonded backing plate will function normally

D. Replace the fractured pad and resurface the rotor — the fractured pad may have scratched the rotor surface

15. A vehicle develops an intermittent ABS activation event — the ABS activates briefly and the pedal pulses during normal braking. After the event the pedal returns to normal and no DTCs are stored. A road test confirms the ABS activates briefly at approximately 15 mph on every stop before the ABS stops and normal braking resumes. Which of the following is MOST likely the cause?

A. The ABS intervention threshold is calibrated to activate at 15 mph — this is normal low-speed ABS behavior

B. One wheel speed sensor begins reading zero at approximately 15 mph on every stop — possibly due to excessive air gap or a partially damaged tone ring that creates a signal dropout at a specific rotational frequency

C. The ABS pump motor runs briefly at 15 mph to build accumulator pressure — the pedal pulsation is pump motor vibration

D. The metering valve releases front pressure at 15 mph — the pressure release causes the brief pedal pulsation

16. A vehicle with ABS is diagnosed with a failing ABS pump motor. The technician confirms the motor fails to run during a scan tool activation test. Conventional brake bleeding has already been

completed and the pedal is firm. Which of the following BEST describes the correct management of this condition?

- A. The pump motor failure prevents any braking — the vehicle must be towed until the HCU is replaced
- B. The vehicle can be safely driven with conventional braking fully intact — ABS function is disabled but normal hydraulic braking remains fully operational. Replacement of the HCU or pump motor assembly is required to restore ABS function
- C. The pump motor can be bypassed temporarily — open the bleeder screws slightly to reduce circuit pressure and allow safe driving without ABS
- D. The pump motor failure will progressively damage the solenoid valves — the HCU must be replaced before the vehicle is moved

17. A vehicle is equipped with disc brakes on all four corners. The rear brake pads are wearing faster than the front brake pads even though the front brakes absorb significantly more braking energy. Which of the following is MOST likely the reason?

- A. The rear caliper bores are larger than the front — more piston area generates more force per unit of pressure, wearing rear pads faster
- B. The rear brakes are operating in a higher temperature environment due to proximity to the exhaust system
- C. The vehicle has a proportioning valve that sends more pressure to the rear than the front — contrary to typical practice
- D. The rear calipers are integrated with the electric parking brake — the daily parking brake use generates additional friction and heat at the rear pads that accelerates their wear beyond normal service braking wear

18. A technician is inspecting the front disc brake caliper on a vehicle and finds the caliper body is cracked at the bridge section connecting the two caliper halves. The caliper piston and seals appear intact and no fluid leaks are present. Which of the following is the correct service action?

- A. Apply a high-temperature brake system sealant to the crack and return the caliper to service — no fluid leak is present
- B. Replace the cracked caliper immediately — a structural crack in the caliper body will propagate under braking pressure and can cause sudden catastrophic caliper failure

C. Monitor the crack at each service interval — replacement is only required when fluid begins leaking through the crack

D. Reinforce the crack area with a high-strength epoxy patch and torque the caliper mounting bolts more tightly

19. Technician A says that when performing a brake fluid flush, the technician should begin by removing fluid from the master cylinder reservoir before bleeding. Technician B says the most contaminated fluid is in the wheel braking units — flushing should begin there by opening all bleeder screws simultaneously. 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

20. A vehicle's wheel cylinder is being rebuilt in the field due to the unavailability of a replacement unit. The cylinder bore shows a very light amount of staining on the inner wall but the bore wall is smooth with no pitting or corrosion. New cup seals are available. Which of the following is the correct assessment?

A. A smooth bore with light staining is acceptable for rebuild — clean the bore, install new cups, and return to service

B. Any discoloration of the wheel cylinder bore requires honing before new seals can be installed

C. Wheel cylinder rebuilds in the field are never acceptable — the unit must be replaced with a new or remanufactured cylinder

D. The staining indicates moisture has been absorbed — the bore must be chemically treated with brake fluid flush to neutralize the moisture before rebuild

21. A vehicle with ABS develops an unusual condition where the ABS activates at highway speed under light braking — braking force well below what should be needed to approach wheel lockup. The road surface is dry and all wheel speed sensors are reading accurately on the scan tool. Which of the following is MOST likely the cause?

A. The ABS module intervention threshold has been lowered by a software fault — the module is activating at lower deceleration rates than designed

- B. The brake pads are worn to minimum thickness — thin pads generate proportionally higher deceleration per unit of pressure, triggering ABS earlier
- C. A tone ring on one wheel has sections of teeth that are closer together than others — when that section passes the sensor the calculated deceleration rate triggers ABS even at light braking
- D. The master cylinder is generating brief pressure spikes at the beginning of each application — the spike triggers ABS before normal braking pressure builds

22. A technician is inspecting a rear drum brake and finds the brake shoe lining has separated from the shoe web table at one end — the lining is still bonded at the other end but has lifted approximately 3mm from the table at the loose end. The lining thickness is above minimum. Which of the following is the correct service action?

- A. Apply bonding adhesive to the separated section and clamp until cured — bonded linings can be repaired this way if the separation is limited
- B. Replace both rear axle brake shoe assemblies — a lining separation is a structural failure that creates inconsistent friction and potential for the separated section to break free during braking
- C. Continue to use the shoes — the lining is still mostly bonded and the separation will reseat under brake application pressure
- D. Replace only the affected shoe — the opposite shoe lining is intact and can remain in service

23. A vehicle comes in with a complaint that the brake pedal is lower than normal. An inspection reveals the master cylinder reservoir is at the minimum level. The technician adds brake fluid to bring the level to the maximum mark and tests the pedal — it is now at normal height and feels firm. The technician returns the vehicle without further investigation. Which of the following BEST describes the error in this diagnosis?

- A. The technician should have bled the system before adding fluid — adding fluid to a low-level system can introduce air
- B. Low brake fluid level almost always indicates either brake component wear (pads or shoes worn down, displacing fluid from calipers to reservoir) or a fluid leak — adding fluid without finding the cause leaves the original problem unaddressed and potentially dangerous
- C. The technician should have replaced the brake fluid simultaneously with adding it — mixing new and old fluid degrades the new fluid
- D. The technician should have checked the proportioning valve — low fluid level can cause the valve to shift and remain displaced

24. During a brake inspection, the technician finds an aftermarket braided stainless steel brake hose installed at the right front. The hose appears to be undamaged and the correct length. Which of the following BEST describes the acceptability of this hose?

A. Stainless steel braided hoses are never acceptable for street vehicles — they are for racing use only and must be replaced with OEM rubber hoses

B. Aftermarket stainless steel braided brake hoses meeting DOT FMVSS 106 standards are generally acceptable — verify the hose meets DOT standards and is installed with correct fittings and routing before approving it

C. Stainless steel braided hoses are always superior to rubber hoses — the technician should recommend replacing all remaining rubber hoses with stainless steel for improved performance

D. Aftermarket brake hoses of any type are never acceptable — only factory OEM hoses can be used in the hydraulic circuit

25. A vehicle with four-channel ABS has the left front and right rear wheels on a dry surface, and the right front and left rear wheels on a patch of ice. A panic stop is performed. How does four-channel ABS handle this complex split-mu scenario?

A. ABS selects the lowest-traction wheel and modulates all four wheels at that low-traction threshold to maintain consistent deceleration

B. ABS selects the highest-traction wheel and applies maximum pressure to all four wheels — the low-traction wheels will briefly lock until pressure is modulated

C. ABS modulates each wheel independently based on its own speed sensor data — the ice-side wheels receive appropriate pressure modulation to prevent lockup on ice while the dry-side wheels can sustain higher braking pressure without lockup

D. In split-mu conditions ABS cannot function safely — it disables itself and reverts to conventional braking to prevent yaw instability

26. A technician confirms that a rear disc brake caliper slide pin is seized. Both the pin and bore show significant corrosion. The technician removes all corrosion and the pin now slides freely through the bore. Which of the following is the MOST appropriate service recommendation?

A. Reinstall the cleaned pin with fresh lubricant — cleaning and lubricating a corroded slide pin and bore is an acceptable repair

B. Replace the slide pin only — the bore is acceptable once corrosion is removed

C. Replace the complete caliper assembly — a severely corroded slide pin and bore that required significant corrosion removal may have dimensional changes that affect pin-to-bore clearance and future reliability

D. Replace only the slide pin boots — the boots failed and allowed corrosion. Installing new boots over the cleaned components prevents future corrosion

27. During a disc brake pad inspection, the technician finds a vehicle has ceramic pads on the front and NAO organic pads on the rear. The owner wants all four pads replaced with semi-metallic pads to improve stopping performance. Which of the following is the BEST technical response?

A. Semi-metallic pads will improve stopping performance on all four wheels — complete the pad change as requested

B. Semi-metallic pads have different friction characteristics from the original spec — changing all four pads to semi-metallic without also adjusting the proportioning valve will cause brake imbalance

C. Semi-metallic pads are acceptable replacements but they will generate more dust, more noise, and more rotor wear than the current combination — the owner should understand these tradeoffs before proceeding

D. Changing all four pads to semi-metallic is not acceptable — only OEM-specified pad compounds can be used on any vehicle

28. A vehicle with drum rear brakes has a brake system complaint. During inspection, the technician discovers that the rear drum brake hold-down springs are missing on one rear brake assembly — only the hardware was reinstalled during a previous service. Which of the following symptoms would the missing hold-down springs MOST likely produce?

A. The rear brake shoes will not apply when the pedal is pressed — the springs hold the shoes in the applied position

B. The rear brake shoes can shift position on the backing plate during braking and cornering — causing noise, inconsistent braking, and potential shoe-to-drum hardware contact

C. The automatic adjuster will advance continuously without the hold-down springs — causing the shoes to over-adjust and drag

D. The wheel cylinder pistons will be unable to retract — the missing springs remove the return force that retracts the pistons

29. Which of the following vehicle conditions would MOST benefit from a vehicle equipped with Hill Start Assist compared to a vehicle without it?

- A. A rear-wheel drive vehicle with a limited-slip differential frequently driven in snowy conditions
- B. A front-wheel drive vehicle driven frequently on grades with a manual transmission where the driver must transition from brake to throttle and clutch simultaneously during uphill starts
- C. A vehicle with a continuously variable transmission frequently operated in stop-and-go highway traffic
- D. A performance vehicle with large brake rotors and high-friction pads driven on a track with frequent threshold braking

30. A technician is replacing front brake pads and rotors. After completing the installation and performing a burnishing procedure, the technician performs a final inspection. The left front inboard pad shows light scoring marks on its friction surface matching the rotor surface finish. The left front outboard pad also shows matching contact marks. Both rear pads show even contact marks. The right front pads show similar results. Which of the following BEST describes this finding?

- A. The scoring marks indicate the pads were installed incorrectly — they are contacting the rotor at an improper angle
- B. Light matching contact impressions on new pad friction surfaces following burnishing confirm the pads are seating evenly against the rotor — this is normal and expected after proper burnishing
- C. The pads must be replaced — friction surfaces should remain completely smooth after burnishing with no contact marks
- D. The scoring marks indicate the rotor surface was not properly cleaned before pad installation — the rotor must be resurfaced again

31. During an ESC system diagnosis, the technician uses a scan tool to observe sensor data during a test drive. With the vehicle traveling in a straight line on a flat road, the yaw rate sensor shows a reading of negative 4 degrees per second. The steering angle sensor shows 0 degrees. Which of the following does this data suggest?

- A. This is normal — the yaw rate sensor has a negative 4 degree per second offset from center that is within acceptable calibration tolerance
- B. The yaw rate sensor is reading a rotation when the vehicle should be traveling straight — the sensor may require recalibration or may have failed

C. The steering angle sensor is uncalibrated — the 0 degree reading while the vehicle is turning is causing the ESC module to miscalculate the yaw error

D. The vehicle has significant front-end misalignment — the vehicle is actually tracking at an angle despite steering wheel center position

32. A customer reports an intermittent hard pedal condition that occurs once or twice per week at random times. No warning lights are illuminated. All vacuum components test normal at the time of inspection. Which of the following is MOST likely the cause?

A. The brake fluid has absorbed moisture — intermittent vapor pockets form and suddenly increase pedal resistance

B. The vacuum check valve has a delayed closure characteristic — it intermittently delays vacuum supply to the booster

C. A small intermittent vacuum leak in the booster supply circuit — when the leak occurs it reduces available vacuum enough to cause a temporarily hard pedal

D. The power steering pump intermittently loses output — momentary pressure drops cause reduced Hydro-Boost assist

33. A vehicle has front disc brakes and rear drum brakes. During hard braking from highway speed, the customer reports the rear end of the vehicle feels like it wants to step out (oversteer tendency) before the front brakes lock. Which of the following is MOST likely the cause?

A. The metering valve has failed — without it the front brakes apply instantly, causing severe front brake bias and front wheel lockup before the rears engage

B. The proportioning valve has failed in the open position — full hydraulic pressure is reaching the rear brakes without limiting, causing the rear wheels to lock before the front wheels during hard stops

C. The rear drum brake shoes are contaminated with oil — higher initial friction at the rear causes premature rear lockup

D. The front brake pads have glazed — reduced front friction shifts the braking balance to the rear causing oversteer tendency

34. A scan tool reads all four wheel speed sensors as generating signal. However, the ABS warning light is on with a DTC indicating a wheel speed sensor signal range fault for the left rear — the

signal is present but is fluctuating erratically. The tone ring appears intact and the sensor is firmly mounted. Which of the following should the technician check NEXT?

- A. The ABS module — an erratic signal from a confirmed-intact sensor and mounting indicates module processing failure
- B. The left rear caliper — hydraulic pressure variations from a dragging caliper interfere with speed sensor signal quality
- C. The left rear wheel bearing — worn bearing play allows the hub and tone ring to wobble relative to the sensor, creating varying air gap that produces the erratic signal
- D. The left rear brake pad wear indicator — a pad worn to its indicator can create electromagnetic interference with the wheel speed sensor

35. The ESC system activates on a vehicle during a highway entry ramp at normal posted speed in dry conditions. The system applies the outside rear brake briefly and reduces engine torque. The driver describes feeling the car "pull itself back into line." Which of the following BEST describes what occurred?

- A. The TCS system detected excessive wheelspin during acceleration on the ramp and intervened
- B. The ABS system incorrectly activated during the cornering maneuver, applying pressure to the outside rear wheel
- C. The ESC system detected oversteer — the rear of the vehicle was beginning to slide outward during the ramp curve — and correctly intervened by applying the outside front brake and reducing engine torque to stabilize the vehicle
- D. The ESC system detected understeer during the ramp curve and applied the inside rear brake to rotate the front of the vehicle back into the intended arc

36. A vehicle is being serviced after a customer complaint of ABS activating during gentle rain with no aggressive braking. Road test confirms ABS activating at 10 to 15 mph during normal stops in wet conditions. The road surface is wet but not flooded. All four wheel speed sensors read accurately on the scan tool. Which of the following is MOST likely the cause?

- A. The ABS is functioning correctly — tires with worn tread are losing traction in wet conditions and locking during moderate braking, triggering necessary ABS intervention
- B. The ABS module has a water-sensitive component that lowers its activation threshold in humid conditions

C. Water is causing electrical resistance in one wheel speed sensor circuit — the increased resistance produces a lower voltage signal that the module interprets as reduced wheel speed

D. The wet road surface is causing the tires to hydroplane — the ABS cannot function correctly on a hydroplaning tire

37. A vehicle with ABS has a wheel speed sensor tone ring mounted on the outer CV joint. The customer complains of an ABS warning light that illuminates only during sharp turns. Which of the following is MOST likely the cause?

A. The CV joint is worn — during sharp turns the CV joint binding causes wheel speed variations that trigger ABS faults

B. During sharp turns the CV joint reaches maximum articulation angle — if the tone ring has a cracked or damaged section that is only exposed to the wheel speed sensor during maximum joint articulation, the signal dropout occurs only during turns

C. The wheel speed sensor wiring harness is too short — it stretches during sharp turns and creates an intermittent open circuit

D. The wheel bearing develops play during turning — the lateral force during turns moves the tone ring away from the sensor

38. A vehicle with a drum parking brake incorporated in a rear disc brake rotor hat (drum-in-hat) has a parking brake that will not hold at all on any grade. The technician confirms the cable tension is correct and the actuation lever moves freely. Which of the following is the MOST likely cause?

A. The rear disc brake caliper slide pins are seized — they prevent the parking brake lever from generating adequate force

B. The drum-in-hat parking brake shoes are worn to metal — the friction material is gone and the steel shoe web is contacting the drum surface providing minimal friction

C. The proportioning valve is blocking rear hydraulic pressure from reaching the parking brake circuit

D. The rear rotor has been replaced without replacing the drum-in-hat shoes — the new drum surface requires a bedding period before adequate friction is developed

39. A vehicle is being inspected for a repeat ABS warning light. The technician clears the DTC and confirms the light goes out. The DTC is a left front wheel speed sensor range fault. After a 15-mile test drive the code returns. The tone ring is intact and the sensor mounting is secure. The

wiring harness inspection shows no damage. Which of the following is the MOST logical next step?

- A. Replace the ABS control module — repeat codes after replacing a confirmed-intact sensor indicate module failure
- B. Replace the wheel speed sensor — an intermittent sensor fault can occur from internal sensor degradation even with normal wiring and tone ring condition
- C. Replace the left front wheel bearing assembly — a wheel bearing with marginal play can produce intermittent tone ring wobble and air gap variation that causes repeat sensor range faults despite intact wiring and apparent tone ring condition
- D. Perform a complete four-wheel brake bleed — air in the system is creating pressure variations that the sensor interprets as wheel speed fluctuations

40. During a brake inspection, a technician observes the rear brake light on the instrument cluster is illuminated but the parking brake is released, the brake fluid is at the correct level, and no hydraulic faults are present. The ABS light is off. The vehicle was recently in a front-end collision. Which of the following is MOST likely the cause?

- A. A front brake line was kinked during the collision — reduced front brake pressure has triggered the pressure differential valve
- B. The front airbag deployment during the collision jarred the master cylinder reservoir float switch loose — it is now permanently triggering the low-fluid warning
- C. The collision damaged the brake warning light switch wiring — a damaged wire is completing the warning light circuit continuously
- D. The front brake caliper was replaced after the collision — the replacement triggered the pressure differential valve and it was not recentered

41. A new technician is performing brake pad replacement and asks why it is important to confirm the caliper slide pin boots are intact and properly seated during every brake pad service. Which of the following BEST explains the importance?

- A. Torn slide pin boots allow brake dust to enter the pin bore, accelerating brake dust accumulation inside the caliper
- B. Torn or displaced slide pin boots allow moisture and road contamination to reach the slide pin and bore — causing corrosion that seizes the pin, prevents caliper sliding, and causes rapid uneven pad wear on that corner

C. Slide pin boots contain a metered amount of lubricant — torn boots release this lubricant onto the brake pad friction surfaces

D. Intact slide pin boots are required for the ABS wheel speed sensor to function correctly at that corner

42. A technician is performing brake service on a vehicle and discovers that a previous repair used DOT 5 silicone brake fluid in a vehicle that originally specified DOT 3 glycol fluid. The entire brake system — calipers, lines, hoses, and master cylinder — was previously flushed with DOT 5. The vehicle has ABS. Which of the following represents the correct service action?

A. DOT 5 is acceptable in this application — continue to use DOT 5 for all future brake fluid services on this vehicle

B. Flush the entire brake system with compatible DOT 4 or DOT 3 glycol fluid — the DOT 5 silicone fluid is not compatible with ABS systems and must be removed

C. Add DOT 3 to the reservoir to gradually dilute and displace the DOT 5 over several fluid changes

D. Leave the DOT 5 in service until the next scheduled brake fluid change — mixing glycol with the existing DOT 5 at the same change is safe as long as moisture content is checked first

43. A vehicle with ESC has been involved in a low-speed collision that damaged the front bumper and grille. No airbags deployed. The ESC and ABS warning lights are illuminated after the collision. No wheel speed sensor codes are stored. DTCs indicate a fault with the front radar sensor. Which of the following BEST explains the ABS and ESC warning light illumination?

A. The collision jarred the ABS module, causing it to generate fault codes for all systems it controls

B. The front radar sensor provides vehicle speed data to the ABS module — without radar input the ABS module disables both ABS and ESC as a safety measure

C. The damaged front radar sensor is part of the Automatic Emergency Braking system — a fault in the AEB forward sensor disables AEB, and on this vehicle the AEB disable also triggers ESC and ABS disable as a system interlock

D. The front bumper structure provides electromagnetic shielding for the ABS wheel speed sensors — damage to this structure interferes with sensor signals at all four wheels

44. A technician measures the brake pedal height with the engine running and brake pedal at rest and finds it is 2 inches lower than the manufacturer's specification. The brake fluid level is normal

and the master cylinder pushrod is correctly adjusted. Which of the following should the technician investigate FIRST?

- A. The vacuum booster — an insufficient vacuum supply produces a partially applied booster at rest, lowering the pedal
- B. The brake pad thickness — significantly worn pads allow the caliper pistons to extend further into the caliper bore, lowering the pedal height
- C. The brake drum adjustment — rear shoes that are significantly out of adjustment (too far from the drum) do not create enough initial hydraulic resistance, and the pedal travels further before pressure builds
- D. The master cylinder bore diameter — an undersized bore requires more pedal strokes to build pressure, keeping the pedal lower than normal

45. A technician completes a comprehensive brake inspection and finds all components within specification — pads above minimum, rotors above minimum with acceptable parallelism variation, no leaks, firm pedal, and functional ABS. The brake fluid shows 2.8% moisture content on a test strip. The vehicle has 50,000 miles and the fluid has never been changed. Which of the following represents the MOST appropriate service recommendation?

- A. No brake service needed — all measurements are within specification including the fluid moisture content
- B. Replace the brake fluid — even though 2.8% is just below the typical 3% replacement threshold, moisture near the threshold level represents significantly degraded fluid that should be replaced as part of comprehensive preventive maintenance at 50,000 miles with no service history
- C. Add a brake fluid moisture absorbing additive to reduce moisture content below 2%
- D. Replace all rubber components — fluid at 2.8% moisture has likely degraded the rubber seals throughout the system

PRACTICE EXAM 8: ANSWER KEY AND EXPLANATIONS

1. C. Internally bypassing master cylinder primary cup seal — A pedal that sinks slowly to the floor under sustained pressure with no external leaks, and that sinks again every time after application regardless of how many times the pedal is pumped, is the textbook presentation of an internally bypassing master cylinder cup seal. The seal allows fluid to flow back past the piston continuously under sustained pressure, and the bypass continues with every application.

2. A. Internal booster fault — With adequate vacuum supply (19 in-Hg), an intact hose, and a functioning check valve all confirmed — the problem must be inside the booster itself. The vacuum booster diaphragm or internal control valve that directs vacuum and atmosphere to the appropriate chambers may have failed. The booster receives vacuum but cannot convert it into mechanical assist force due to internal mechanical failure.

3. B. Parking brake warning switch not opening fully — With the parking brake confirmed released, fluid level correct, and no hydraulic faults, the parking brake warning light remaining on is most directly a switch problem. The parking brake warning switch must open its circuit when the lever is released. If the switch mechanism is sticking, misadjusted, or the switch itself has failed in the closed position, the warning light circuit remains complete and the light stays on.

4. C. Brake system not properly bled after brake job — A floor pedal on the first application with partial improvement on successive pumps is the definitive sign of significant air in the hydraulic system. A brake job that includes caliper replacement, pad replacement, and brake line opening without thorough subsequent bleeding will trap air in the circuit. The floor pedal on the first stop after pickup confirms the system was returned with unacceptably large air volumes.

5. B. Reservoir already at maximum before piston retraction — This is one of the most common brake service errors. When caliper pistons are retracted to accommodate new, thicker pads, the fluid previously occupying the caliper bore displacement returns through the brake lines into the master cylinder reservoir. If the reservoir is already full, it has nowhere to accept the returning fluid and overflows — damaging anything the fluid contacts including paint and electrical components. The reservoir must be checked and fluid removed before retracting pistons.

6. B. Front rotor parallelism variation — Front rotor parallelism variation produces a characteristic vibration that is most prominently felt in the steering wheel because the front calipers are mechanically connected to the steering knuckles and linkage. The hydraulic pressure pulses from front rotor thickness variations transmit through the caliper bracket into the knuckle and through the tie rod and steering shaft to the steering wheel. Rear source vibration transmits primarily through the chassis to the seat.

7. B. Adjuster incorrectly installed for duo-servo system — In a duo-servo drum brake, the self-adjuster is designed to activate during rearward movement and rearward brake application. If the

adjuster cable and lever are installed in the wrong orientation — effectively reversing the activation direction — the adjuster will activate during forward braking events instead. This causes over-adjustment during normal forward driving and braking, eventually resulting in severe brake drag.

8. D. Pedal height difference between engine-off and engine-on bleed — A brake bleed performed with the engine off does not have vacuum assist present. Without vacuum assist the master cylinder piston rests at a slightly different position than with assist engaged. When the engine is running and vacuum assist is applied, the booster pushrod is positioned slightly differently at rest — resulting in a marginally different pedal height reference. This slight pedal height difference is not a hydraulic fault.

9. B. Rear caliper piston seal failure — Fluid leaking past a caliper piston seal accumulates inside the caliper and eventually exits through the dust boot, coating the caliper body and the inside of the wheel rim. The fluid appears clear and slightly slippery — consistent with brake fluid rather than gear oil (which is darker and heavier) or bearing grease (which is thicker and greasier). The location on the backside of the wheel is consistent with fluid running from the caliper area.

10. B. Hydro-Boost accumulator lost pressure during storage — The Hydro-Boost accumulator stores hydraulic pressure to provide non-engine-powered assisted brake applications. Over a 30-day storage period the accumulator may gradually lose its stored charge through normal seepage past the accumulator check valve. The first two to three brake applications after the storage period are made against a depleted accumulator and therefore feel stiffer. Normal feel returns once the running engine pump restores accumulator pressure.

11. C. All four wheels locking is normal on non-ABS vehicles at maximum braking — On vehicles without ABS, there is no automatic lockup prevention. During a braking event that exceeds available tire traction — a true panic stop — all four wheels may lock if sufficient pedal force is applied. This is expected behavior on a non-ABS equipped vehicle and does not indicate brake system malfunction. ABS was specifically developed to prevent this scenario.

12. C. Left front flexible brake hose — internally deteriorated one-way restriction — The bleeder screw test confirms hydraulic drag — opening the bleeder at the left front wheel would release the trapped pressure and allow the wheel to spin freely. The rigid lines are intact. Single-wheel hydraulic drag with intact rigid lines and a confirmed bleeder screw positive test result consistently points to an internally deteriorated flexible hose acting as a one-way restriction at that specific wheel.

13. B. Resurface if needed — 0.040 inch below maximum means adequate material remains — The drum is at the midpoint between standard and maximum diameter. This means it has used half of its available machining allowance and still has 0.040 inch of material remaining before it would reach the maximum diameter limit. This represents serviceable remaining material. The drum can be resurfaced if needed (provided the finished diameter remains at or below maximum) and returned to service.

14. B. Replace both front axle pads and inspect caliper for damage — A fractured pad backing plate is a safety failure — the pad cannot provide consistent controlled braking force when its structural foundation is broken. Both front axle pads must be replaced (matched friction on both sides). The caliper bore and piston must also be inspected — a fractured backing plate may have scored the piston face or damaged the bore surface, requiring caliper replacement as well.

15. B. Wheel speed sensor signal dropout at specific rotational frequency — An ABS activation that consistently occurs at a specific vehicle speed — always at 15 mph — on every stop points to a mechanical event that repeats at a specific wheel rotation frequency. A partial tone ring damage or a sensor with an air gap that is marginally acceptable at higher speeds but produces a signal dropout at the lower rotational frequency corresponding to 15 mph would create exactly this pattern.

16. B. Safe to drive with conventional braking intact — ABS disabled — The ABS pump motor is used only during active ABS pressure cycling — it plays no role in normal hydraulic brake pressure generation during conventional stops. With the pump motor failed, the solenoid valves default to their normal open/closed positions that allow unimpeded hydraulic flow for conventional braking. Normal hydraulic braking is fully intact and the vehicle is safe to drive — but ABS is non-functional and the customer must be informed.

17. D. Daily parking brake use adding to rear EPB pad wear — On vehicles with integrated electric parking brake rear calipers, the rear pads serve dual duty — service braking (which is lighter at the rear as designed) and parking brake duty. Every parking brake application generates friction heat and wear at the rear pads exclusively. Over the life of the vehicle, the accumulated daily parking brake use can be significant enough to wear rear pads faster than the front pads that absorb more service braking energy but have no parking brake duty.

18. B. Replace the cracked caliper immediately — A caliper with a structural crack in its body must be replaced immediately without exception. The caliper body is a pressure vessel that contains hydraulic fluid under braking pressure. A crack in the caliper bridge or body can propagate suddenly under braking load — resulting in catastrophic caliper failure, sudden brake fluid loss, and complete loss of braking at that wheel. No adhesive, sealant, or reinforcement patch is an acceptable repair for a structurally cracked caliper.

19. A. Technician A only — Technician A's recommendation to draw fluid from the master cylinder reservoir before bleeding is correct practice — it reduces the volume of old fluid that must be flushed from the system and prevents overflow when pistons are retracted. Technician B's suggestion to open all bleeder screws simultaneously is incorrect — this introduces large amounts of air simultaneously at all four corners and allows the master cylinder to pump dry. Bleeder screws are always opened one at a time in a sequential bleeding process.

20. A. Smooth bore with light staining — acceptable for rebuild — A wheel cylinder bore that is smooth, undamaged, and free of pitting is serviceable for rebuild. Light surface staining from

fluid residue does not indicate dimensional damage or incompatible bore condition. The key disqualifiers for rebuild are pitting, scoring, or bore corrosion that cannot be removed by light honing. A smooth bore with new cup seals will provide reliable service after rebuild.

21. C. Tone ring with uneven tooth spacing — Variable tooth spacing on a tone ring produces calculated speed variation at specific rotational positions. If a section has slightly closer teeth, the sensor generates a signal that the module interprets as rapid deceleration. At highway speed under light braking, even minor speed calculation variation from this mechanical defect can exceed the ABS intervention threshold — triggering ABS at braking forces far below what should be needed for wheel lockup on dry pavement.

22. B. Replace both rear axle shoe assemblies — A separated lining is a structural failure. The separated section can break free completely during braking — either jamming in the drum and causing sudden lockup or allowing the drum to be braked by bare metal. Additionally, brake shoes are always replaced in axle sets to maintain balanced friction between the two rear wheels. A lining separation on one shoe requires replacement of all shoes on the rear axle.

23. B. Low fluid level indicates wear or leak — cause must be identified — Brake fluid levels drop for two reasons: pad and shoe wear displacing fluid from the calipers and wheel cylinders into the reservoir as components wear, or an active fluid leak from the hydraulic system. Adding fluid without identifying and correcting the root cause is a diagnostic failure. If the cause is a leak, the leak will continue and eventually lead to brake failure. If the cause is extreme pad wear, the pads needed replacement. Simply adding fluid creates a false sense of security.

24. B. Verify DOT standards compliance before approving — Aftermarket stainless steel braided brake hoses that meet DOT Federal Motor Vehicle Safety Standard 106 (FMVSS 106) are legally acceptable for highway use. The key verification points are DOT compliance marking on the hose, correct fitting type and thread specifications, appropriate hose length without kinking or excessive slack, and correct routing without contact with hot or moving components. A DOT-compliant stainless steel hose in good condition is acceptable.

25. C. Each wheel modulated independently by its own sensor data — Four-channel ABS handles every wheel completely independently. The ice-side wheels receive individual pressure modulation cycles — reducing pressure when the sensor detects that wheel approaching lockup on the ice surface. The dry-side wheels, with far more available traction, can sustain much higher brake pressure without lockup. The system maximizes braking at every wheel simultaneously regardless of what the adjacent wheel is experiencing.

26. C. Replace complete caliper assembly — A slide pin and bore that required significant corrosion removal may have lost dimensional precision. The pin-to-bore clearance is carefully designed — too tight and the pin binds; too loose and the caliper rocks instead of sliding cleanly. Severe corrosion removal with a wire brush or abrasive tool can change these dimensions. A caliper

that required extensive corrosion removal to achieve free pin movement is a caliper whose long-term reliability is uncertain — replacement is the sound recommendation.

27. C. Semi-metallic tradeoffs — customer should understand before proceeding — Semi-metallic pads are a technically acceptable substitute for organic and ceramic pads in terms of performance — they provide good friction and heat resistance. However, they produce significantly more brake dust, generate more noise especially when cold, and are harder on rotor surfaces than ceramic compounds. The customer's expectation of improved performance may be met at the cost of increased noise, dust, and rotor wear. Informing the customer of these tradeoffs before proceeding respects their right to an informed decision.

28. B. Shoes shift on backing plate — noise and inconsistent braking — Hold-down springs keep the brake shoes flat against the backing plate contact pads with a controlled spring force. Without hold-down springs, the shoes are free to shift laterally and pivot on their anchor points during braking, cornering, and wheel rotation. This shifting produces rattling or clunking noises, inconsistent shoe-to-drum contact, and potentially contact between the shoe or associated hardware and the drum — all symptoms of unrestrained shoe movement.

29. B. Manual transmission vehicle on grades with simultaneous foot transition — Hill Start Assist is specifically most beneficial on manual transmission vehicles driven on grades, where the driver must simultaneously release the brake pedal, engage the clutch, and apply throttle during an uphill start. This three-input transition requires precise timing to prevent rollback. HSA eliminates the rollback risk by holding the brakes briefly during the foot transition, allowing the driver to manage the clutch and throttle without the time pressure of preventing the vehicle from rolling.

30. B. Light contact impressions confirm even pad seating — normal after burnishing — After proper burnishing, new brake pads should show even contact impressions across the full friction surface — confirming the pad face has seated uniformly against the rotor. Light surface marks matching the rotor finish are the expected result of the controlled heat and pressure contact during burnishing. This finding confirms the brake job was performed correctly and the pads are seated properly for service.

31. B. Yaw rate sensor reading rotation on straight-ahead travel — A yaw rate sensor reading negative 4 degrees per second when the vehicle is traveling straight and the steering angle sensor shows 0 degrees indicates the yaw rate sensor is detecting rotation that is not occurring or is not being commanded by the driver. This represents either a sensor calibration error, a sensor fault, or actual slight vehicle yaw that is consistent with a tracking problem. Either way the sensor data does not match expected vehicle behavior and requires investigation.

32. C. Intermittent vacuum leak in booster supply circuit — An intermittent hard pedal without warning lights and normal test results points to a condition that only occurs under specific circumstances. A small intermittent vacuum leak — perhaps a hose that collapses at a specific engine vacuum level, or a check valve that opens briefly at certain throttle positions — would

reduce booster vacuum intermittently without producing consistent diagnostic findings during static testing when the leak is not actively occurring.

33. B. Proportioning valve failed open — The proportioning valve prevents rear brake lockup by limiting rear pressure above the split point. A failed-open proportioning valve allows full master cylinder pressure to reach the rear brakes — the rear wheels lock during hard stops before the fronts. When rear wheels lock before the front wheels, the rear of the vehicle is decelerated more rapidly than the front, causing an oversteer or spinning tendency. This is why the proportioning valve is a critical safety component.

34. C. Worn left rear wheel bearing allowing hub wobble — An erratic signal from a sensor that is confirmed mounted correctly with an intact tone ring points to a mechanical source of signal variation. Worn wheel bearing play allows the hub to wobble during rotation — alternately moving the tone ring closer to and farther from the sensor tip. This creates alternating strong and weak signal pulses that the module registers as an erratic signal range fault without any tone ring damage.

35. D. ESC detected understeer — applied inside rear brake to correct — This description matches understeer correction. During a right-hand ramp, the front of the vehicle was pushing wide (understeer). ESC corrects understeer by braking the inside rear wheel — the left rear during a right turn — generating a yaw moment that rotates the front of the vehicle back into the intended arc. The driver felt this as "the car pulling itself back into line" — the characteristic feel of ESC understeer correction.

36. A. Worn tires losing traction in wet conditions — normal ABS activation — Tires with worn tread have significantly reduced wet traction due to reduced water channeling capability from the tread grooves. On wet surfaces, worn tires approach their traction limit at much lower braking forces than new tires — causing wheel lockup to begin during moderate braking, which triggers legitimate ABS intervention. The ABS is functioning correctly; the root cause is tire wear that has reduced wet traction below what the ABS threshold assumes.

37. B. Cracked or damaged tone ring section only exposed during maximum joint articulation — A tone ring mounted on a CV joint hub only presents each section of its circumference to the sensor at the specific rotational position of the joint. If a cracked or damaged section of the tone ring is normally positioned away from the sensor but is brought into sensor alignment when the CV joint reaches maximum articulation during sharp turns, the signal dropout and resulting DTC would occur only during sharp turns — exactly as described.

38. B. Drum-in-hat parking brake shoes worn to metal — With cable tension confirmed correct and the actuating lever moving freely, the lack of any holding force on any grade indicates a friction problem — not a mechanical actuation problem. Parking brake shoes worn completely through their friction material have bare metal shoe web contacting the drum surface. Metal-to-metal contact provides essentially zero friction for holding purposes. The shoes must be replaced.

39. C. Left front wheel bearing with marginal play — After confirming the sensor, wiring, and tone ring are all intact, the remaining source of a repeat sensor range fault is the physical relationship between the tone ring and sensor tip. Marginal wheel bearing play — not severe enough to produce noise or detectable by manual hub rocking — can allow slight tone ring wobble during vehicle movement that creates intermittent air gap variation. This is detected by the ABS module as a range fault but produces no other symptoms. Bearing replacement resolves both the bearing and the sensor code.

40. A. Front brake line kinked during collision — pressure differential valve triggered — A front collision that kinks or deforms a front brake line creates an unequal pressure condition between the front and rear hydraulic circuits. The pressure differential valve senses the circuit pressure imbalance and shifts its spool toward the lower-pressure front circuit — activating the brake warning light switch. The collision created the brake line damage that caused the circuit imbalance, which triggered the warning light.

41. B. Moisture and road contamination cause corrosion and slide pin seizure — Slide pin boots serve as the primary protective barrier between the slide pins and the harsh operating environment — moisture, salt, road debris, and heat cycling all attack exposed metal. When a boot tears, becomes displaced, or hardens and cracks, the protective barrier is breached. Moisture and contamination reach the slide pin and bore, initiating corrosion. Once corroded, the pin cannot slide freely and the caliper cannot apply or release evenly — producing the uneven pad wear that signals the seized pin.

42. B. Flush entire system with compatible glycol fluid — DOT 5 silicone fluid is incompatible with ABS hydraulic modulator seals and cannot safely remain in an ABS system. Unlike glycol fluids (DOT 3, 4, and 5.1) which are mutually compatible, DOT 5 silicone and glycol fluids are not — they cannot be mixed and the incompatibility causes seal damage. The entire system must be completely flushed with fresh DOT 3 or DOT 4 glycol fluid and all rubber components should be inspected for silicone-related deterioration.

43. C. Forward radar sensor fault disabling AEB and triggering ABS/ESC interlock — On modern vehicles where AEB is integrated with the ESC/ABS architecture, a fault in the forward collision detection sensor system may trigger an interlock that disables related active safety systems. The design rationale is that if the forward sensor providing collision avoidance data is compromised, the vehicle safety systems that rely on that data — or that share the ABS HCU hardware for their intervention — should not operate in a potentially unsafe partial state.

44. C. Rear brake shoes significantly out of adjustment — A pedal that is lower than specification at rest — requiring more travel before braking begins — while all other components are normal and pushrod is correctly adjusted, indicates that the shoes are too far from the drum. The hydraulic fluid must displace the wheel cylinder pistons farther than normal before shoe-to-drum contact occurs, consuming pedal travel without generating brake force. Proper rear brake adjustment restores the pedal to its correct resting height.

45. B. Replace the brake fluid — At 2.8% moisture content, 50,000 miles, and no service history, the brake fluid is approaching the replacement threshold. While 2.8% is technically below the 3% replacement threshold, this represents fluid that has been absorbing moisture for years and is within 0.2% of the replacement limit. At 50,000 miles with no previous service, this is the appropriate time for preventive fluid replacement — waiting for 3.0% means driving with borderline fluid indefinitely. Sound preventive maintenance replaces the fluid now.