PRACTICE EXAM 3: ASE A4 SIMULATION (40 QUESTIONS)

STEERING SYSTEMS DIAGNOSIS AND REPAIR (Questions 1–12)

1. Each of the following can cause a power steering pump to whine EXCEPT:

A. A low fluid level in the pump reservoir

B. A restricted return line back to the reservoir

C. Air trapped in the hydraulic circuit

D. An over-tightened serpentine belt tensioner

2. A rack and pinion gear is leaking fluid at both bellows boots equally. What is the most likely internal cause?

A. The rack pressure spring has worn past its adjustment range

B. The outer tie rod boots have pressurized air from road operation

C. The internal rack seal has failed allowing fluid past the piston

D. The power steering pump relief valve is stuck in the open position

3. A vehicle exhibits "morning sickness" — very hard steering when cold that normalizes after 10 minutes of driving. What component is typically the cause?

A. Worn spool valve in a hydraulic rack and pinion assembly

B. Stuck flow control valve inside the power steering pump

C. Glazed serpentine belt slipping on the pump pulley cold

D. Gelled power steering fluid in the reservoir and lines

4. During steering column service, the technician notices the collapse cartridge shows deformation grooves on the inner tube. What is the correct action?

A. Replace the steering column because the collapse feature has been compromised

B. Install new collapse capsules and reuse the existing column assembly

C. Repack the cartridge with fresh grease and reassemble the column

D. Heat and straighten the inner tube to restore its original dimensions

5. The LEAST likely cause of excessive steering wheel free play is:

A. Worn sector teeth in a recirculating ball gearbox

B. Low power steering fluid in the reservoir

C. Worn inner tie rod socket at the rack end

D. Loose steering column intermediate shaft pinch bolt

6. Which power steering fluid contamination indicates internal wear metal in the system?

A. Pink, translucent fluid at proper level on the dipstick

B. Amber fluid with slight darkening from age and heat

C. Gray or silver-tinged fluid with metallic particles visible

D. Clear fluid with a slight yellow tint after fluid exchange

7. An EPS warning light comes on intermittently during cold-weather starts. Scan tool data shows battery voltage at the module drops to 8.5 volts during crank. What is the most likely cause?

A. The EPS module has an internal fault with the voltage regulator

B. The steering angle sensor needs calibration for cold operating conditions

C. The torque sensor circuit has a high-resistance connection at the column

D. A weak battery or high-resistance power feed to the EPS module

8. When routing a high-pressure power steering hose during installation, a technician allows it to contact an exhaust manifold bracket. What is the expected outcome?

A. No issue because high-pressure hoses are rated for high heat

B. The hose will chafe or burn through, causing sudden fluid loss

C. The hose will expand but remain functional at reduced pressure

D. The hose may leak at the crimped fitting from heat expansion

9. A pickup truck's steering damper is being inspected. Which finding indicates replacement is required?

A. External oil leakage with a wet stripe down the damper body

B. Slight dampness at the rod seal after a hard off-road trip

C. Firm resistance when the damper is stroked by hand slowly

D. Rust visible on the exterior of the damper mounting eyes

10. A Toyota Camry with column-mounted EPS develops a clicking noise only when the steering wheel is turned at parking speeds. The noise originates from inside the dashboard. What is the most likely cause?

A. The power steering pressure switch at the pump is failing

B. The steering angle sensor is faulty and sending erratic data

C. A worn worm gear or coupling in the EPS assist unit

D. The intermediate shaft U-joint has failed from contamination

11. Each of the following is a correct practice when servicing an airbag system EXCEPT:

A. Disabling the system per the manufacturer's specified procedure

B. Waiting the specified capacitor discharge time after battery disconnect

C. Using a conventional test light to verify squib circuit continuity

D. Storing removed airbags face-up on a flat surface during service

12. A vehicle's steering wheel sits off-center to the left when driving straight down a level road. Alignment readings show front toe is within total specification. What is the most likely cause?

A. The rear toe is asymmetric causing a thrust angle offset

B. The left and right toe adjustments are unequal from center

C. The steering gear mounting bolts need to be retorqued to spec

D. The front tires need to be rotated to balance wear and pressure

SUSPENSION SYSTEMS DIAGNOSIS AND REPAIR (Questions 13–24)

13. The LEAST likely cause of clunking over small bumps at the front of the vehicle is:

A. Failed stabilizer bar end links on both sides

B. Worn control arm bushings at the pivot points

C. Loose strut-to-knuckle mounting bolts and hardware

D. Sagged coil springs with reduced free length

14. A MacPherson strut is being replaced on a FWD vehicle. A suspension fastener that passes through a rubber bushing must be torqued:

A. At full suspension droop with wheels hanging from the lift

B. At normal ride height with the suspension loaded to curb weight

C. With the spring compressed using a proper spring compressor tool

D. Before the strut mount nut is tightened to its final specification

15. A vehicle has sagged on the right rear corner after sitting overnight. The vehicle uses a conventional coil spring suspension (not air). What is the most likely cause?

A. A broken or collapsed coil spring on the right rear corner

B. A shock absorber leaking fluid that affects ride height settling

C. The rear stabilizer bar bushing has separated from the frame

D. The rear wheel bearing has failed causing the hub to droop

16. A technician performs the "rock test" on a wheel with the vehicle lifted. Vertical play (12 and 6 o'clock) is detected. Horizontal play (3 and 9 o'clock) is not. What does this finding indicate?

A. Worn outer tie rod end or worn idler arm pivot assembly

B. Worn stabilizer bar end link on that side of the vehicle

C. Failed strut upper mount bearing from age and mileage

D. Worn wheel bearing or worn ball joint at that wheel

17. Excessive unsprung mass at the wheel would most likely cause which result?

A. Harsher ride quality and reduced tire contact over rough roads

B. Improved cornering grip due to reduced body roll during turns

C. Lower suspension travel requirements on bumpy road surfaces

D. Longer shock absorber service life from reduced cycling loads

18. A vehicle with adaptive damping shows all dampers feeling equally soft regardless of mode selection. Which cause should be investigated FIRST?

A. The rear shock mounting bushings have deteriorated at both corners

B. The suspension mode selector switch on the dashboard has failed

C. The suspension control module or network communication fault

D. The air suspension compressor has failed to maintain pressure

19. A customer complains of a "wallowing" ride quality after highway bumps. The vehicle continues to bounce multiple cycles before settling. What is the most likely cause?

A. The coil springs are sagged below manufacturer specification

B. The shock absorbers or struts have worn and lost damping capability

C. The stabilizer bar bushings have deteriorated with age

D. The tire pressures are set significantly above the placard specification

20. A pickup truck equipped with a torsion bar front suspension needs ride height adjustment. The correct procedure is:

A. Lift the truck on a hoist with the wheels hanging free

B. Disconnect the torsion bars to release preload before adjusting

C. Adjust while supported on jack stands under the lower control arms

D. Adjust the preload bolt with the truck on level ground at curb weight

21. A technician replaces a rear cradle bushing on a unibody vehicle. After reinstallation, alignment shows rear toe cannot be brought within specification. What is the most likely cause?

A. The new cradle bushing is defective and needs to be replaced again

B. The cradle was not centered using the manufacturer-specified procedure

C. The rear toe adjustment cam has seized and will not rotate to specification

D. The alignment machine needs to be recalibrated by the service technician

22. Air suspension ride height sensors on a luxury SUV report different values than the actual measured ride height at each corner. What is the correct diagnostic approach?

A. Check each sensor's linkage for breakage, then calibrate via scan tool

B. Replace all four ride height sensors with new OEM units

C. Flush and refill the air suspension hydraulic system with fresh fluid

D. Disconnect the battery for 30 minutes to reset the sensor values

23. A technician must install a coil spring during strut assembly. Which practice is correct?

A. Use any compressor with sufficient capacity to compress the spring

B. Compress the spring with the strut mount nut still fully torqued

C. Use a universal bar clamp to hold coils during removal and install

D. Use a compressor rated for the specific spring, engaged on the correct plane

24. Stabilizer bar bushings (at the frame mount) are deteriorated on a mid-size sedan. What symptom would this most likely produce?

A. Clunking over large bumps during hard acceleration from a stop

B. Steering wheel shimmy at highway speeds above 55 mph on level road

C. Squeaking during suspension articulation or during body roll events

D. Reduced power steering assist during parking-lot steering maneuvers

WHEEL ALIGNMENT DIAGNOSIS, ADJUSTMENT, AND REPAIR (Questions 25–35)

25. A vehicle shows positive cross-caster (right caster more positive than left) as a factory specification. The purpose of this deliberate asymmetry is to:

A. Compensate for the vehicle's center of gravity shift during cornering

B. Counteract the natural right pull caused by road crown on US roads

C. Reduce steering effort at parking speeds during tight maneuvering

D. Provide better high-speed stability during lane-change operations

26. Each of the following would cause a vehicle to pull to one side EXCEPT:

A. Unequal tire pressure on left and right front tires

B. A dragging brake caliper on one front wheel

C. Asymmetric camber between left and right front wheels

D. Equal total toe-in on both front wheels at specification

27. Scrub radius is affected by which modification?

A. Installing aftermarket wheels with a different offset than stock

B. Adjusting front camber to a more negative value than factory

C. Changing the toe-in setting at the front of the vehicle

D. Reducing tire pressure on all four tires below placard spec

28. A technician prepares to perform a wheel alignment. Before the vehicle rolls onto the rack, which step is correct?

A. Unlock the turn plates to allow the wheels to rotate freely

B. Unlock the rear slip plates to allow lateral motion

C. Verify turn plates and slip plates are locked in position

D. Install the steering wheel holder to brace the steering column

29. A vehicle with lane-keep assist has had its steering wheel re-centered during alignment. The forward-facing camera was not disturbed. What calibration is still required?

A. No calibration is needed because the camera was not touched

B. Only the rear tire pressure monitoring system needs resetting

C. Only the electronic stability control module requires relearning

D. The steering angle sensor must be calibrated to its new zero-point

30. After completing an alignment, the steering wheel is found to be 15° off-center when driving straight. What is the correct correction?

A. Remove and reindex the steering wheel on its splined shaft

B. Split the front toe adjustment unequally to re-center the wheel

C. Adjust the rear toe to shift the thrust angle compensation

D. Loosen and reposition the intermediate shaft at the rack input

31. A FWD vehicle with MacPherson struts has no factory adjustment for front camber. The camber reading is 0.8° more negative than specification on one side. The correct action is:

A. Install an aftermarket camber adjustment kit or repair the underlying cause

B. Leave the camber out of specification and document on the printout

C. Perform a strut-to-knuckle bolt retorque to shift the camber reading

D. Rotate the tires front-to-rear to equalize the wear pattern

32. Setback refers to which measurement?

A. The lateral distance between the thrust line and vehicle centerline

B. The sum of left and right front toe readings on an alignment rack

C. The side-to-side wheelbase difference between front wheels on axle

D. The fore-aft offset between the two wheels on the same axle

33. A vehicle's alignment printout shows the thrust angle reading -0.25°. The left rear toe is +0.05° and the right rear toe is +0.35°. What is the correct action?

A. Reduce both rear toe readings to zero and recheck the thrust angle

B. Equalize the rear toe settings so they match, centering the thrust line

C. Adjust the front toe to compensate for the existing thrust angle offset

D. Leave rear toe alone and document the thrust angle on the printout

34. Each of the following is a primary alignment angle EXCEPT:

A. Camber at the front wheels of the vehicle

B. Caster at the front wheels of the vehicle

C. Steering axis inclination at the front wheels

D. Toe at both front and rear wheels of vehicle

35. A vehicle has developed feathered wear on both front tires, with the feathers ramping up from outside to inside. What is the cause?

A. Excessive toe-in at the front of the vehicle

B. Excessive positive camber at both front wheels

C. Excessive caster at both front wheel positions

D. Worn front shock absorbers allowing tire cupping

WHEEL AND TIRE DIAGNOSIS AND SERVICE (Questions 36–40)

36. A tire has a 1/8-inch puncture in the tread area, well within the repairable zone. Industry best practice for permanent repair is:

A. An external string plug inserted without dismounting the tire

B. A combination plug/patch applied from the inside after dismount

C. An interior-only patch without plugging the puncture channel

D. Sealant poured through the valve stem to coat the inner liner

37. A vehicle with direct TPMS has a tire rotated from right rear to right front. After rotation, the TPMS display shows the new right-front position as still displaying 32 psi when the tire gauge reads 36 psi. What is the most likely cause?

A. The TPMS sensor at the right front position has a dead battery

B. The tire was overinflated during rotation to compensate for heat

C. The right front sensor failed during the tire rotation procedure

D. The TPMS relearn was not performed and sensor positions are not updated

38. A wheel bearing is being replaced. The new hub assembly uses a torque-to-yield axle nut. The correct procedure for installation is:

A. Install a new axle nut and torque to the manufacturer specification

B. Reuse the original axle nut if it appears undamaged from service

C. Install a generic axle nut of matching thread pitch and torque

D. Apply anti-seize to the threads and reuse the original fastener

39. A growling noise from the left front of the vehicle increases with speed. During cornering, the noise gets LOUDER during a left turn and QUIETER during a right turn. What is the most likely cause?

A. A cupped right front tire causing rotational noise during turning

B. A failing left front wheel bearing loaded during the right turn only

C. A failing right front wheel bearing loaded during the left turn

D. A worn outer CV joint on the left front half-shaft assembly

40. The correct maximum pressure for seating tire beads during mounting is:

A. Thirty psi across all passenger tire applications

B. Forty psi for standard passenger tire applications

C. Sixty psi for standard passenger tire applications

D. The maximum pressure listed on the tire sidewall

Practice Exam 3: Answer Key and Explanations

1. D — An over-tightened tensioner will not cause pump whine — it may cause belt noise or bearing damage, but the pump itself receives adequate drive. Whining originates from air in the system, low fluid, or restricted return flow that starves the pump. Tensioner condition is inspected for slipping (whine causes), not over-tension.

2. C — When both bellows boots leak fluid equally, the internal rack seal has failed, allowing pressurized fluid past the piston into the rack tube. From there, fluid is forced out both ends through the bellows. External seal or pump issues would not produce bilateral boot leakage — this symptom signature points specifically to internal rack failure requiring rack replacement.

3. A — "Morning sickness" is the classic signature of a worn spool valve in a hydraulic rack and pinion — typically on late-1980s/early-1990s GM vehicles. When cold, the worn valve's internal clearances allow hydraulic bypass; as the system warms and seals expand, function normalizes. The only correct repair is rack replacement.

4. A — The collapse cartridge is a one-time safety feature designed to deform during a crash. Once deformed — even partially from service damage — the column cannot absorb crash energy as designed. Replacement is the only correct action; reusing a partially collapsed column leaves the driver inadequately protected in the next collision.

5. B — Low power steering fluid causes whining and loss of assist but does not produce steering wheel free play. Free play originates from mechanical wear: worn sector teeth, worn tie rod sockets, or loose steering shaft connections. Fluid level affects hydraulic function, not mechanical slack in the steering linkage.

6. C — Gray or silver-tinged fluid contains wear metal particles from internal pump or rack components. This contamination accelerates wear in every remaining component. A flush is mandatory, and the source of the metal (worn pump, worn rack) must be identified and repaired — simply adding fluid spreads contamination further through the system.

7. D — EPS modules are extremely sensitive to supply voltage; below 9–10 volts, most systems disable or reduce assist. A weak battery or high-resistance power feed causes intermittent voltage drops during

crank that throw EPS warnings. Always verify battery and power/ground integrity via voltage drop testing before condemning EPS hardware.

8. B — High-pressure hoses are rated for high pressure, not sustained high heat from contact with exhaust components. The hose will chafe, char, and eventually burn through, causing sudden high-pressure fluid loss — a fire hazard in the engine bay. Proper hose routing away from heat sources is a critical service detail.

9. A — An external oil leak with a visible wet stripe down the body indicates seal failure and internal fluid loss — the damper can no longer generate consistent damping force. Slight dampness around the rod is normal weepage; firm resistance and exterior rust do not indicate failure. Active leakage requires replacement.

10. C — Clicking at parking speeds from inside the dashboard on a C-EPS vehicle is the classic signature of a worn worm gear or motor coupling in the column-mounted assist unit. The noise originates specifically where the motor drives the steering shaft. Other causes (pressure switch, SAS, intermediate shaft) produce different symptoms or locations.

11. C — Conventional test lights source enough current to potentially trigger an airbag deployment. Only manufacturer-approved scan tools or certified airbag testers can safely probe SRS circuits. Battery disconnect, capacitor discharge wait time, and face-up airbag storage are all correct practices — only the test light is prohibited.

12. B — When total toe is correct but the steering wheel is off-center, the left and right tie rod adjustments are unequal — one side is longer than the other. The fix is splitting the toe adjustment equally between sides while centering the wheel. Total toe can be correct even with very unequal individual readings.

13. D — Sagged coil springs produce reduced ride height and dynamic alignment changes, but they do not typically cause clunking. Clunking over small bumps comes from components with mechanical play — failed end links, worn bushings, or loose mounting hardware. Springs produce height and wear complaints, not impact noises.

14. B — Fasteners passing through rubber bushings must be torqued at ride height with the suspension loaded. Torqueing at full droop preloads the bushing in a twisted position, accelerating bushing wear and causing alignment drift over time. This is one of the most tested service practices on the A4 exam.

15. A — Overnight settling to a lower ride height on one corner of a conventional-spring vehicle (not air) points to a broken or collapsed coil spring. Shock leaks and bar bushing issues don't cause overnight settling, and wheel bearings don't affect ride height. Visual inspection of the spring confirms the diagnosis.

16. D — Vertical play (12-6 rock) indicates worn wheel bearings or worn ball joints on the load-carrying side. Horizontal play (3-9 rock) would indicate tie rod or idler arm wear. The distinction between rock-test directions is a core A4 diagnostic pattern that isolates specific component categories.

17. A — Higher unsprung mass (heavy wheels, oversized tires) means the wheel cannot respond to road inputs as quickly, reducing tire-to-road contact over rough surfaces and producing a harsher ride. Lower unsprung mass improves ride quality and grip — which is why performance wheels are made of lighter alloys.

18. C — When all dampers behave identically regardless of mode, the control module isn't commanding them — typically due to module failure or network communication loss. A failed switch or individual damper would affect only one aspect; the "all equal, no response" pattern points to the command source, not the actuator.

19. B — Multiple bounce cycles after bumps is the signature of failed shocks or struts. Healthy dampers control spring oscillation within one cycle; the bounce test directly confirms damper condition. Sagged springs affect ride height; bar bushings affect cornering; high pressure affects harshness but not multi-cycle bounce.

20. D — Torsion bar adjustment must be performed with the vehicle on the ground at curb weight, with all suspension components in their normal loaded positions. Adjusting on a lift with the wheels hanging produces incorrect preload settings that will be wrong the moment the vehicle returns to the ground.

21. B — Subframe and cradle bushing replacements that disturb the cradle position require a manufacturer-specified centering procedure using alignment pins. Without proper centering, the cradle sits a few millimeters off design position, making alignment uncorrectable through normal adjustment range. The fix is returning to the centering procedure.

22. A — Ride height sensors frequently fail by broken plastic linkage arms (a common aging failure). Inspect the linkage first, then verify sensor calibration. Replacing all four sensors blindly is wasteful;

flushing hydraulic fluid doesn't apply to air systems; battery disconnect doesn't reset sensor calibration on most systems.

23. D — Spring compressors must be specifically rated for the spring being compressed and engaged in the correct geometric plane per the manufacturer's specification. Universal bar clamps and under-rated compressors can slip or fracture, releasing the spring with potentially fatal force. This is a non-negotiable safety practice.

24. C — Stabilizer bar bushings at the frame mount produce squeaking during suspension articulation and body roll as the dry or cracked rubber rubs against the bar. They do not cause clunking under acceleration (that's end links or axle issues), steering shimmy, or power steering complaints — their symptom is a specific noise during articulation.

25. B — Cross-caster (more positive caster on one side) is deliberately specified by some manufacturers to counter the natural rightward pull caused by road crown on US right-side-drive roads. The asymmetric caster generates a mild leftward compensation that makes the vehicle track straight on crowned pavement without driver correction.

26. D — Equal total toe-in on both front wheels is symmetric and cannot cause a pull — pull requires asymmetry or an unbalanced force. Unequal tire pressure, brake drag, and asymmetric camber all produce asymmetric forces that pull the vehicle in one direction. Equal settings always produce symmetric behavior.

27. A — Scrub radius is the horizontal distance at ground level between the steering axis and the contact patch center. Wheel offset (the distance from the wheel's mounting flange to its centerline) directly affects where the contact patch sits relative to the steering axis, changing scrub radius significantly when offset changes.

28. C — Before the vehicle rolls onto the rack, turn plates and slip plates must be locked so the vehicle positions correctly and stably. Unlocking is done after positioning and before measurement. Unlocking prematurely or installing the steering wheel holder before positioning produces setup errors.

29. D — Re-centering the steering wheel during toe adjustment invalidates the SAS's learned zero-point. Even if the camera wasn't disturbed, the SAS must be recalibrated — the forward camera relies on accurate SAS data for lane-keep assist to work correctly. SAS calibration is mandatory whenever the wheel position has been shifted.

30. B — When the steering wheel is off-center after alignment, splitting the front toe adjustment unequally between left and right tie rods recenters the wheel while maintaining correct total toe. This is standard procedure, not a sign of error. Reindexing the wheel on its splines is a last resort only on improperly installed wheels.

31. A — When a MacPherson strut FWD vehicle has no factory camber adjustment and the reading is out of spec, the correct actions are installing an aftermarket camber adjustment kit (slotted strut bolts, offset bolts) or repairing the underlying cause (bent strut, failed mount). Leaving the reading out of spec is not acceptable.

32. D — Setback is the fore-aft offset between two wheels on the same axle. Significant setback points to collision damage, worn subframe bushings, or bent components. The term specifically describes longitudinal (front-to-back) displacement, not lateral, thrust line, or summed measurements.

33. B — When thrust angle is non-zero, the first correction is equalizing the rear toe settings so they are symmetric. Setting left and right rear toe equal centers the thrust line. Only after the thrust line is centered can front toe be properly set. This sequence is the foundation of thrust-angle alignment.

34. C — Steering Axis Inclination (SAI) is a secondary (diagnostic) alignment angle, not a primary adjustable angle. The three primary angles are camber, caster, and toe. SAI is built into the knuckle and is used diagnostically (through included angle comparison) to identify bent components, not adjusted during normal alignment service.

35. A — Feathered wear ramping from outside to inside indicates the tire has been scrubbing outward as it rolls — the signature of excessive toe-in. Running a hand across the tread would feel catchy outside-to-inside. Camber causes smooth edge wear; caster doesn't cause edge wear; worn shocks cause cupping, not feathering.

36. B — Industry best practice for permanent tire repair is a combination plug/patch applied from inside a dismounted tire. The plug fills the puncture channel; the patch seals the inner liner. External string plugs without dismount are temporary/emergency only; interior patches without plugging leave the channel vulnerable to contamination.

37. D — Direct TPMS systems need to relearn which sensor is at which position after tire rotation. Without relearn, the vehicle continues to report the old sensor's position (right rear's sensor now shows

at the right front location). The sensor itself may be working correctly — the vehicle just doesn't know it moved.

38. A — Torque-to-yield axle nuts are single-use fasteners designed to stretch during their initial torque cycle. Reusing them cannot produce proper preload because the stretch has already occurred. Always install new torque-to-yield nuts per specification; substituting generic nuts of matching pitch does not replicate the designed clamping force.

39. C — The bearing that gets loaded during a turn is the one that makes the most noise. In a left turn, weight transfers to the right, loading the right front bearing. If noise increases in a left turn, the RIGHT bearing is the failing component. This is the core A4 diagnostic pattern — "loaded side is the loud side."

40. B — Forty psi is the maximum safe pressure for seating tire beads during mounting. Exceeding this can cause beads to fail and suddenly release with potentially fatal force. If beads won't seat at 40 psi or less, dismount and investigate — don't over-pressurize. This is a documented shop safety requirement.