PRACTICE EXAM 9: ASE T5 SIMULATION (50 QUESTIONS)

1. A heavy-truck driver complains that the front end "darts" left and right when transitioning over road expansion joints, but the truck tracks straight at all other times. The most likely cause is:

A. Bump steer caused by the drag link not being parallel to the front spring at design ride height

B. Excessive caster on both front wheels

C. Mismatched front tire pressures

D. Worn fifth wheel locking jaws

2. The component on a heavy-truck chassis that mounts to the frame at the front spring's rear eye and provides a swinging pivot that accommodates spring length change during deflection is the:

A. Pitman arm

B. Drag link

C. Rear shackle

D. Stabilizer bar end link

3. A heavy-truck steer axle alignment shows acceptable caster and toe specifications, but the steering wheel sits 5 degrees off-center to the left during straight-line driving. The proper correction is to:

A. Replace the drag link with a longer assembly

B. Adjust both tie rod adjusting sleeves equally in opposite directions

C. Loosen the steering gear mounting bolts and reposition the gear

D. Disconnect and reposition the pitman arm on the sector shaft

4. The proper response when a heavy-truck driver complains of a clunking noise that occurs only when accelerating from a stop is to:

A. Replace the front shock absorbers

B. Adjust the cab leveling valve

C. Re-torque the front spring U-bolts

D. Inspect the upper torque rod bushings on the rear suspension

5. A heavy-truck integral hydraulic steering gear's pressure relief valve protects:

A. Pump seals, hose assemblies, and gear seals from rupture during full-lock turns

B. The torsion bar from over-twisting under heavy steering input

C. The recirculating ball bearings from contamination damage

D. The pitman arm from impact loads during cornering

6. A heavy-truck driver complains of slow steering response that improves as the truck warms up. The most likely cause is:

A. Worn front shock absorbers

B. A bent pitman arm

C. Cold-fluid viscosity producing reduced pump output until fluid warms

D. Mismatched front tire pressures

7. Technician A says the FMCSA out-of-service criterion for steering wheel free play is approximately 4 inches of rim travel for a 22-inch wheel. Technician B says broken U-bolts on a heavy-truck suspension are an FMCSA out-of-service condition. Who is correct?

A. A only

B. B only

C. Both A and B

D. Neither A nor B

8. The proper component to inspect when a heavy-truck driver complains of progressively worsening steering wheel free play after months of service, with linkage components within specification, is:

A. Steering U-joints and intermediate shaft splines

B. Front spring U-bolt torque

C. Cab leveling valve adjustment

D. Power steering pump output pressure

9. A heavy-truck rear suspension uses a tandem-axle leaf-spring design with a center hanger. The center hanger is the most heavily stressed assembly on the chassis because:

A. It carries the full weight of the trailer kingpin

B. It controls air bag inflation pressure

C. It concentrates the entire tandem load through small structural sections

D. It provides the rear axle thrust angle adjustment

10. The OSHA federal regulation that requires personal protective equipment for heavy-truck servicing is found in:

A. 49 CFR 393, Subpart F

B. 49 CFR 393, Subpart G

C. 29 CFR 1910.147

D. 29 CFR 1910.132

11. A heavy-truck driver complains that the truck "pulls" toward the side where a tire is leaking pressure. The mechanism of this pull is:

A. Brake drag from heat at the leaking tire

B. Increased rolling resistance on the lower-pressure tire pulling the truck toward that side

C. Excessive caster developed at the lower-pressure side

D. Worn drag link ball studs on the affected side

12. The proper position for a heavy-truck driver during inflation of a single-piece tubeless tire is:

A. Outside the trajectory zone with a clip-on remote inflation chuck

B. Above the tire to monitor pressure visually

C. Directly in front of the rim flange

D. With the inflation gauge held in hand near the valve stem

13. A heavy-truck steer axle measures camber within specification on both wheels, and the included angle on both wheels is also within specification. The driver complains of severe inside-shoulder wear on both front tires. The most likely cause is:

A. Excessive negative camber on both front wheels

B. Mismatched dual rear tires

C. Excessive toe-out

D. Chronic underinflation

14. A heavy-truck integral hydraulic steering gear's recirculating ball mechanism translates rotational input from the input shaft into:

A. Twisting motion of the torsion bar

B. Pressure changes in the flow control valve

C. Sector shaft rotation

D. Linear motion of the ball nut

15. Technician A says the heavy-truck FMVSS 204 standard governs steering wheel rim and column impact requirements. Technician B says FMVSS 204 governs the rearward displacement of the steering column during a frontal collision. Who is correct?

A. A only

B. B only

C. Both A and B

D. Neither A nor B

16. A heavy-truck wheel-end has been operated with a contaminated lubrication system. The technician should inspect for:

A. Pitting and scoring on bearing rollers and cup races

B. Excessive cab vibration at highway speeds

C. Reduced power steering pressure during turns

D. Off-center steering wheel position

17. The proper procedure for verifying that a heavy-truck wheel speed sensor is producing accurate signals is:

A. Apply a torque wrench to the sensor mounting bolts

B. Spin the wheel and listen for noise

C. Use a scan tool or oscilloscope to verify signal output during wheel rotation

D. Visually inspect the sensor lead for damage only

18. A heavy-truck driver complains of vibration that occurs only when traveling above a specific speed (around 55 mph). The most likely cause is:

A. Worn front shock absorbers

B. A bent pitman arm

C. Mismatched front tire pressures

D. Wheel-and-tire imbalance creating speed-dependent resonance

19. The component that transmits steering motion from the pitman arm to the left front steering knuckle is the:

A. Tie rod

B. Drag link

C. Stabilizer bar

D. Sector shaft

20. The proper response when a heavy-truck driver complains that the steering effort changes during low-speed maneuvering is:

A. Verify power steering fluid level and condition before further inspection

B. Replace the front shock absorbers

C. Adjust the cab leveling valve

D. Re-torque the front spring U-bolts

21. A heavy-truck rear suspension uses an air-spring design. The component that receives air supply from the chassis air dryer through a pressure-protection valve and routes it to the bags is the:

A. Stabilizer bar

B. Slave cylinder

C. Height control valve

D. Pitman arm extension

22. A heavy-truck driver complains of vibration that worsens during cornering and improves at steady tracking, regardless of cornering direction. The most likely cause is:

A. Mismatched dual rear tires

B. Bearing wear in both front wheel-ends

C. A bent pitman arm

D. Excessive caster on both front wheels

23. The proper response when a heavy-truck wheel speed sensor has been installed correctly with proper air gap and the ABS controller still reads erratic signals is:

A. Replace the entire ABS controller

B. Replace the brake drum

C. Re-torque the wheel nuts to higher specification

D. Verify wheel bearing endplay falls within TMC RP 618 specification

24. A heavy-truck rear axle is being aligned and the technician finds 0.6 degree of negative thrust angle. The proper action on an air-spring suspension is to:

A. Adjust the upper torque rod length to correct the axle's perpendicularity to the chassis

B. Replace both rear shock absorbers

C. Replace the rear air bags

D. Adjust the height control valve linkage rod

25. The proper procedure for measuring a heavy-truck's chassis ride height is to:

A. Lift the front wheels off the ground for measurement

B. Apply parking brakes during measurement

C. Use the manufacturer's specified reference points with the truck at curb weight on a level surface

D. Apply maximum steering wheel rotation during measurement

26. A heavy-truck driver complains that the truck pulls toward the right shoulder consistently during highway driving. The driver reports that the pull began suddenly during a recent trip. The most likely cause is:

A. Excessive caster on the right front wheel

B. A new tire with internal conicity defect

C. Worn upper torque rod bushings

D. A bent steering arm on the right knuckle

27. The component on a heavy-truck steer axle that combines with caster to produce the wheel-return-to-center behavior is the:

A. Drag link

B. Stabilizer bar

C. Tie rod

D. Steering axis inclination (SAI/KPI)

28. A heavy-truck driver complains of a rapid onset of hard steering after starting the truck. The hard steering resolves after the engine idles for a few minutes. The most likely cause is:

A. Cold-temperature thickening of hydraulic fluid producing reduced flow until warmed

B. Worn fifth wheel locking jaws

C. Bent pitman arm

D. Excessive bearing endplay

29. The component on a heavy-truck integral hydraulic steering gear that opens fluid passages directing pressure into the appropriate gear chamber during steering input is the:

A. Pressure relief valve

B. Flow control spool

C. Torsion bar in the rotary control valve assembly

D. Sector shaft rotation

30. A heavy-truck driver complains of slow return-to-center after a turn. Pump pressure tests within specification, fluid level is correct, and front-end mechanical components are intact. The next inspection priority is:

A. Front shock absorber damping

B. Caster measurement on both front wheels

C. Cab leveling valve adjustment

D. Stabilizer bar end link bushing condition

31. The proper procedure for inspecting heavy-truck stabilizer bar end link bushings is to:

A. Remove the bar from the chassis for bench inspection

B. Apply a torque wrench to the link mounting bolts

C. Press on the bar with a dial indicator

D. Visually inspect the bushings for cracks, tears, or elongation with the wheels turned to expose the link

32. A heavy-truck driver complains that the truck pulls during cornering but tracks straight at all other times. The most likely cause is:

A. A worn drag link ball stud allowing transient looseness during steering

B. Excessive bearing endplay on a rear axle

C. Mismatched dual rear tires

D. A loose stabilizer bar mounting bracket

33. The proper response when a heavy-truck driver complains of significant steering wheel free play before any front-wheel response is to:

A. Adjust the over-center screw on the gear cover immediately

B. Increase wheel nut torque on the front wheels

C. Inspect external linkage components for wear before performing any internal gear adjustment

D. Replace the steering pump

34. A heavy-truck oil-bath wheel-end shows fluid level below the minimum mark on the sight glass. The technician should:

A. Continue normal service if no other faults are present

B. Identify and correct the leak source before topping off

C. Apply additional grease to compensate

D. Drain the oil and refill with a different fluid grade

35. The TMC RP 618 procedure specifies that after the initial pre-adjust torque, the inner spindle nut should be:

A. Locked with a jam nut at full torque

B. Re-torqued to a higher value than initial torque

C. Set to maintain endplay between 0.005 and 0.010 inch

D. Backed off completely before applying the final adjustment torque

36. A heavy-truck integral hydraulic steering gear has been internally damaged from operating with a low fluid level. The technician should expect to find:

A. Reduced maximum pressure during a full-lock dead-head test

B. Excessive bearing endplay on the front wheels

C. Off-center steering wheel position

D. Erratic ABS engagement during normal driving

37. The proper response when a heavy-truck driver complains of progressively worsening front tire wear without an obvious alignment cause is to:

A. Replace the front shock absorbers as the first step

B. Adjust toe at the tie rod adjusting sleeves

C. Verify wheel bearing condition and rear axle thrust angle

D. Replace both front tires with matched units

38. A heavy-truck rear suspension uses a walking-beam design with rubber compliance pads. The walking-beam design is typically chosen for:

A. Highway tractor applications with maximum fuel economy

B. Severe off-highway service such as concrete mixers and oilfield equipment

C. Light medium-duty delivery trucks

D. Bus chassis with air-spring requirements

39. The proper procedure for replacing a heavy-truck wheel seal during hub service is to:

A. Reuse the original seal if it appears undamaged

B. Apply gasket sealer to the seal lip before installation

C. Heat the seal to soften it before installation

D. Install a new seal regardless of apparent condition of the old one

40. A heavy-truck driver complains of significant steering effort during low-speed cornering, and the power steering fluid appears foamy. The most likely cause is:

A. Air ingestion into the suction line producing pump cavitation and reduced output

B. Worn front shock absorbers

C. A bent pitman arm

D. Mismatched front tire pressures

41. The proper procedure for engaging the trailer kingpin during fifth wheel coupling is to:

A. Drive forward at high speed for firm engagement

B. Apply trailer brakes only and reverse the truck

C. Verify the locking jaws are in the open position before backing under the trailer

D. Tilt the cab forward to provide additional clearance

42. A heavy-truck driver complains that the chassis tilts noticeably to one side after the truck has been parked for several hours, but resolves when the engine starts. The most likely cause is:

A. A bent rear axle

B. A leaking air bag or air supply line on the affected side

C. Worn front kingpin bushings

D. A misadjusted height control valve linkage rod

43. The proper response when a heavy-truck wheel has been operated with extreme overload is to:

A. Continue service if no obvious damage is visible

B. Reduce inflation pressure to compensate

C. Add additional grease to the bearings

D. Inspect studs, bearings, rim, and hub for damage and replace as needed

44. The proper procedure for measuring rear axle thrust angle on a heavy-truck tractor requires:

A. Calibrated alignment equipment with the truck on a level rack at curb weight

B. Lifting the rear axle off the ground for measurement

C. Disconnecting the trailer from the fifth wheel before measurement

D. Applying parking brakes during measurement

45. The proper procedure for diagnosing a heavy-truck pull complaint is to:

A. Replace the front shock absorbers as the first step

B. Adjust toe at the tie rod adjusting sleeves

C. Verify tire pressures and inspect tires for damage and conicity before measuring alignment

D. Disconnect the steering linkage at the pitman arm

46. A heavy-truck driver complains of vibration that occurs at all speeds and does not change with cornering load. The most likely cause is:

A. Worn front shock absorbers

B. An imbalanced wheel-and-tire assembly or out-of-round drivetrain component

C. Mismatched dual rear tires

D. A bent pitman arm

47. The component that allows fore-and-aft repositioning of a sliding fifth wheel on the chassis is the:

A. Cab tilt mechanism

B. Pintle hook on the rear bumper

C. Pivot point at the kingpin contact surface

D. Slider lock pin engaging the slider rails

48. A heavy-truck driver complains of an abnormal noise from a wheel-end that increases with vehicle speed and varies with cornering load. The most likely cause is:

A. Worn outer wheel bearing on the affected side

B. Excessive front spring U-bolt torque

C. Mismatched front tire pressures

D. A bent pitman arm

49. The proper response when a heavy-truck driver complains that the chassis sits below design ride height despite normal air pressure in the system is to:

A. Replace the rear shock absorbers

B. Drain the power steering reservoir

C. Re-torque the front spring U-bolts

D. Verify the height control valve linkage and inspect for a stuck-closed valve

50. A heavy-truck integral hydraulic steering gear has internal seal failure between the two pressure chambers. The driver will experience:

A. Loss of power steering pump engagement

B. Excessive bearing endplay

C. Reduced power assist during turns despite normal pump output

D. Off-center steering wheel position

PRACTICE EXAM 9: ANSWER KEY AND EXPLANATIONS

1. A — Bump steer caused by the drag link not being parallel to the front spring at design ride height. Bump steer is the truck's tendency to steer when the front suspension hits a bump without driver input. The cause is geometric mismatch between the drag link's angle and the suspension's arc of motion, producing the characteristic darting over expansion joints.

2. C — Rear shackle. The rear shackle is a pair of steel side-plates connected by an upper pin (through the hanger) and a lower pin (through the spring eye). As the spring deflects under load, its overall length increases slightly, and the shackle swings to accommodate the change without binding the spring.

3. B — Adjust both tie rod adjusting sleeves equally in opposite directions. Lengthening one sleeve and shortening the other by an equal amount shifts the wheel position relative to the steering linkage without changing total toe. The steering wheel returns to center while toe specification remains unchanged.

4. D — Inspect the upper torque rod bushings on the rear suspension. Clunking that occurs only during acceleration from a stop is the diagnostic signature of axle wind-up under torque inputs. Worn upper torque rod bushings allow the axle to rotate slightly under acceleration, producing the characteristic clunk.

5. A — Pump seals, hose assemblies, and gear seals from rupture during full-lock turns. The pressure relief valve opens when system pressure exceeds the maximum design value, typically 1,500 to 2,200 psi. This protects the most pressure-sensitive components from rupture during full-lock turns when the pump dead-heads against zero flow.

6. C — Cold-fluid viscosity producing reduced pump output until fluid warms. Cold hydraulic fluid is significantly thicker than warm fluid, which reduces flow through the pump and gear. As the fluid warms and viscosity drops, pump output returns to specification and steering response improves.

7. B — Technician B only. The FMCSA out-of-service criterion for free play on a power-steered wheel is approximately 2 inches of rim travel, not 4 inches. Broken U-bolts on a heavy-truck suspension are a recognized federal out-of-service condition under FMCSA 49 CFR 393.

8. A — Steering U-joints and intermediate shaft splines. With external linkage cleared, the next suspect is the rotational path between the column and the steering gear. Worn U-joints accumulate

rotational lag that the driver perceives as steering wheel free play, and this wear progresses gradually over time.

9. C — It concentrates the entire tandem load through small structural sections. The center hanger of a tandem-axle leaf-spring suspension supports the equalizer bracket or trunnion that links the two axles. This concentration of load through a single mounting point makes it the most heavily stressed assembly on the chassis.

10. D — 29 CFR 1910.132. This OSHA standard governs the use of personal protective equipment for general industry, including heavy-truck servicing. It defines requirements for safety glasses, hearing protection, gloves, and footwear during shop operations.

11. B — Increased rolling resistance on the lower-pressure tire pulling the truck toward that side. A tire with significantly lower pressure than its companion rolls with greater rolling resistance and pulls the truck toward that side. The pull develops as the lower-pressure tire decelerates more than the properly inflated tire.

12. A — Outside the trajectory zone with a clip-on remote inflation chuck. OSHA 29 CFR 1910.177 requires the trajectory zone clearance and remote chuck for inflation of any tire being mounted on a wheel. These positioning requirements are mandatory because rim component or bead failures during inflation can be fatal.

13. C — Excessive toe-out. With camber and included angle within specification on both wheels, the cause must be a non-camber alignment issue. Excessive toe-out places the inside edge of both tires under additional road contact pressure, producing characteristic inside-shoulder wear on both wheels simultaneously.

14. D — Linear motion of the ball nut. The recirculating ball mechanism uses steel ball bearings circulating between the worm threads on the input shaft and matching threads inside the ball nut. As the input shaft rotates, the ball nut translates linearly, driving the sector gear that ultimately moves the pitman arm.

15. B — Technician B only. FMVSS 204 governs the rearward displacement of the steering column during a frontal collision, requiring energy-absorbing column construction. FMVSS 203, not 204, governs steering wheel rim and column impact requirements; Technician A has the standard names confused.

16. A — Pitting and scoring on bearing rollers and cup races. Contaminated lubricant carries abrasive particles into bearing-to-cup contact areas, producing characteristic surface damage. The pitting and scoring are the visible signature of contamination-induced wear and require bearing replacement.

17. C — Use a scan tool or oscilloscope to verify signal output during wheel rotation. Wheel speed sensor verification requires reading the actual electrical signal produced as the tone ring rotates

past the sensor. A scan tool or oscilloscope captures this signal directly, identifying problems with sensor output that bench tests cannot replicate.

18. D — Wheel-and-tire imbalance creating speed-dependent resonance. Vibration that occurs only above a specific speed and disappears below it is the diagnostic signature of dimensional or balance variation that produces resonance at a specific rotational frequency. Wheel-and-tire imbalance is the most common cause.

19. B — Drag link. The drag link transmits steering motion from the pitman arm (driven by the steering gear) to the steering arm on the left front knuckle. This connection is what converts the gear's output into steering motion at the front wheels.

20. A — Verify power steering fluid level and condition before further inspection. Steering effort changes during low-speed maneuvering can originate from many causes, but the simplest, fastest, and most diagnostic check is verifying fluid condition. Low or contaminated fluid produces immediate steering effort changes that resolve when properly addressed.

21. C — Height control valve. The height control valve receives air supply from the chassis air dryer through the pressure-protection valve and routes it to the air bags. The valve regulates air pressure in the bags to maintain constant ride height regardless of load.

22. B — Bearing wear in both front wheel-ends. Vibration that worsens during cornering on either side and improves at steady tracking indicates bearing wear in both front wheels. The cornering load transfers additional weight to the affected bearing on each side, intensifying noise from each.

23. D — Verify wheel bearing endplay falls within TMC RP 618 specification. With sensor air gap verified correct, excessive bearing endplay is the next suspect. Endplay outside specification allows the hub to wobble axially, dynamically changing the sensor-to-tone-ring relationship and producing erratic signals.

24. A — Adjust the upper torque rod length to correct the axle's perpendicularity to the chassis. On air-spring suspensions, adjustable upper torque rods provide rear-axle alignment correction. Lengthening or shortening the rod shifts the axle laterally and rotates it angularly to bring it perpendicular to the chassis centerline.

25. C — Use the manufacturer's specified reference points with the truck at curb weight on a level surface. Ride height specifications reference precise points on the chassis and axle, with the truck unloaded at curb weight on a level surface. Any other measurement condition produces invalid comparisons to specification.

26. B — A new tire with internal conicity defect. Pull that begins suddenly during a recent trip points strongly to a recent service event as the cause. Internal tire conicity creates a constant lateral force that produces a steady pull regardless of pressure, alignment, or driving conditions.

27. D — Steering axis inclination (SAI/KPI). Caster causes the wheels to climb against the self-centering force during a turn, and SAI/KPI causes the wheels to follow a slight upward arc. Together they produce the wheel-return-to-center behavior on heavy trucks.

28. A — Cold-temperature thickening of hydraulic fluid producing reduced flow until warmed. Cold hydraulic fluid is significantly thicker than warm fluid, which reduces flow through the pump and gear. As the fluid warms during idle, viscosity drops and steering response returns to specification.

29. C — Torsion bar in the rotary control valve assembly. The torsion bar links the input shaft to the worm shaft and twists slightly when the driver applies steering torque, opening fluid passages that direct pump pressure into the appropriate gear chamber. When torque is released, the bar untwists and pressure equalizes.

30. B — Caster measurement on both front wheels. Slow return-to-center after a turn indicates inadequate self-centering force, which positive caster provides. With normal hydraulic pressure and intact mechanical components, low caster is the most likely cause.

31. D — Visually inspect the bushings for cracks, tears, or elongation with the wheels turned to expose the link. Turning the front wheels exposes the stabilizer bar end links and allows the technician to inspect each bushing for wear. This is the most efficient and reliable inspection technique.

32. A — A worn drag link ball stud allowing transient looseness during steering. A pull that occurs only during cornering inputs but disappears at steady tracking is the signature of a worn linkage joint that becomes loose only under transient loads. The looseness allows the wheel to deviate briefly during steering inputs.

33. C — Inspect external linkage components for wear before performing any internal gear adjustment. External linkage wear (drag link, tie rod ends, kingpin bushings) is far more common than internal gear wear and should be eliminated first. Adjusting the gear without addressing external wear produces a setting that drifts as soon as the truck moves.

34. B — Identify and correct the leak source before topping off. A wheel-end with low oil indicates an active leak that will continue to drain fluid in service. Topping off without addressing the leak source defers but does not prevent eventual lubrication failure and bearing damage.

35. D — Backed off completely before applying the final adjustment torque. The complete back-off relieves all preload built up during the initial seating step, ensuring that the final adjustment torque is applied to a system at zero preload. Without the back-off, the final adjustment would be inconsistent across different jobs.

36. A — Reduced maximum pressure during a full-lock dead-head test. Internal damage from low-fluid operation typically produces seal degradation that allows fluid to bypass between chambers. The first measurable indication is reduced peak pressure during the dead-head test, where the gear cannot retain fluid pressure during full-lock.

37. C — Verify wheel bearing condition and rear axle thrust angle. Front tire wear without an obvious alignment cause often originates in worn wheel bearings (allowing camber-like tilt) or rear axle thrust angle (forcing the driver to compensate with steering input that scrubs the front tires). Both must be checked before condemning components or replacing tires.

38. B — Severe off-highway service such as concrete mixers and oilfield equipment. Walking-beam suspensions use heavy rigid construction with rubber compliance pads designed to handle the impact loads of severe off-highway operation. They sacrifice ride quality for maximum equalization and durability.

39. D — Install a new seal regardless of apparent condition of the old one. Wheel seals must always be replaced when a hub is opened because the lip is easily disturbed during disassembly and rarely reseats properly. Even an apparently undamaged seal will frequently begin weeping within hundreds of miles after disturbance.

40. A — Air ingestion into the suction line producing pump cavitation and reduced output. Foamy power steering fluid is the diagnostic signature of air being drawn into the pump suction. Cavitation reduces the pump's ability to deliver flow, producing the increased steering effort the driver describes.

41. C — Verify the locking jaws are in the open position before backing under the trailer. The fifth wheel locking jaws must be open before the kingpin enters the throat for proper engagement. Backing into a closed-jaw fifth wheel can damage both the jaws and the kingpin.

42. B — A leaking air bag or air supply line on the affected side. Tilt that develops during shutdown and resolves when running indicates an air supply that holds during operation but cannot maintain pressure during shutdown. The height control valve restores pressure when the engine starts and the air system recharges.

43. D — Inspect studs, bearings, rim, and hub for damage and replace as needed. Severe overload events stress wheel-end components beyond their design limits. Studs may have stretched, bearings may have sustained heat damage, and the rim may have deformed — all require inspection before continued service.

44. A — Calibrated alignment equipment with the truck on a level rack at curb weight. Thrust angle measurement requires a calibrated alignment system with the truck at curb weight on a level rack. Other approaches do not provide the geometric reference needed for accurate measurement.

45. C — Verify tire pressures and inspect tires for damage and conicity before measuring alignment. Tire-related causes are the most common, easiest to verify, and least invasive to address. Beginning with tire inspection prevents unnecessary alignment adjustments when the actual cause is a tire issue.

46. B — An imbalanced wheel-and-tire assembly or out-of-round drivetrain component. Vibration that occurs at all speeds and does not change with cornering load is the diagnostic signature of imbalance or runout in a rotating component, rather than a load-sensitive component like a bearing.

47. D — Slider lock pin engaging the slider rails. The slider lock pin is the mechanical retention component that holds the fifth wheel at a chosen position on the slider rails. When the pin is disengaged, the fifth wheel can be repositioned along the rails to optimize weight distribution.

48. A — Worn outer wheel bearing on the affected side. Bearing noise that increases with speed and varies with cornering load is the classic signature of bearing wear. The cornering load shifts weight onto the affected side, intensifying the noise from the worn bearing while reducing it on the unloaded side.

49. D — Verify the height control valve linkage and inspect for a stuck-closed valve. Chassis ride height below specification with normal air pressure points to a control circuit fault. The height control valve linkage may be misadjusted, damaged, or stuck-closed, preventing the valve from inflating the bags to the proper level.

50. C — Reduced power assist during turns despite normal pump output. Internal seal failure between the two pressure chambers allows fluid to bypass from the pressurized side to the unpressurized side during turns. The pump produces normal output, but the gear cannot retain pressure to push the ball nut, reducing assist felt by the driver.