PRACTICE EXAM 15: ASE T5 SIMULATION (50 QUESTIONS)

1. The component on a heavy-truck rear suspension that allows two drive axles to share load is the:

A. Drag link

B. Equalizing beam

C. Stabilizer bar

D. Pitman arm

2. A heavy-truck driver complains of a slow steering response that improves at higher engine RPM. The most likely cause is:

A. Excessive bearing endplay at the wheel-end

B. A bent pitman arm

C. Insufficient pump output at idle from belt slip or wear

D. Mismatched dual rear tires

3. The proper response when a heavy-truck wheel-end shows fluid weeping at the inboard seal is:

A. Disassemble the hub and replace the seal

B. Top off the oil and continue normal service

C. Apply a polymer sealing compound around the seal

D. Replace only the hub cap

4. The TMC RP 618 specification for final wheel bearing endplay measured with a dial indicator is:

A. 0.000 to 0.001 inch

B. 0.005 to 0.010 inch

C. 0.010 to 0.015 inch

D. 0.001 to 0.005 inch

5. The proper response when a heavy-truck driver complains of significant steering wheel free play with linkage components within specification is:

A. Re-torque the front spring U-bolts

B. Inspect steering U-joints and intermediate shaft splines

C. Replace the front shock absorbers

D. Adjust the cab leveling valve

6. A heavy-truck driver complains of vibration that intensifies during cornering on either side. The most likely cause is:

A. Excessive caster on both front wheels

B. Mismatched front tire pressures

C. Bearing wear in both front wheel-ends

D. A bent pitman arm

7. The component on a heavy-truck integral hydraulic steering gear that opens fluid passages during steering input is the:

A. Torsion bar

B. Pressure relief valve

C. Flow control spool

D. Sector shaft

8. The proper procedure for inflating a heavy-truck multi-piece rim wheel under OSHA 29 CFR 1910.177 is:

A. Inflate at a remote location away from any structure

B. Stand directly in line with the rim during inflation

C. Use a hand-held inflation chuck for precise control

D. Use a tire cage with a clip-on remote inflation chuck

9. The proper response when a heavy-truck oil-bath wheel-end has fluid level below the minimum mark is:

A. Continue normal service if no faults are present

B. Apply additional grease to compensate

C. Identify and correct the leak source before topping off

D. Drain and refill with a different fluid grade

10. A heavy-truck driver complains of accelerated front tire wear with feathered edges pointing toward the inside of the tread. The most likely cause is:

A. Excessive toe-out

B. Worn front shock absorbers

C. Chronic underinflation

D. Excessive negative camber

11. The component that holds air pressure inside a tubeless heavy-truck tire is:

A. A separate inner tube installed inside the tire

B. The tire's outer tread surface

C. A factory-applied sealant inside the tire body

D. The air-impermeable inner liner combined with sealed bead-to-rim contact

12. The component on a heavy-truck rear suspension that resists axle wind-up under braking and acceleration torque on an air-spring design is the:

A. Drag link

B. Torque rod

C. Stabilizer bar

D. Pitman arm

13. The proper response when a heavy-truck driver complains of slow return-to-center after a turn is:

A. Re-torque the front spring U-bolts

B. Replace the front shock absorbers

C. Verify caster on both front wheels

D. Adjust the cab leveling valve

14. A heavy-truck integral hydraulic steering gear has been damaged from operating with 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

15. The proper response when a heavy-truck driver complains of brake-related pull during deceleration is:

A. Replace the front shock absorbers

B. Adjust front-end alignment angles

C. Re-torque the front spring U-bolts

D. Verify equal brake function on both sides

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

A. Toe

B. Steering axis inclination (SAI/KPI)

C. Camber

D. Thrust angle

17. A heavy-truck driver complains of vibration that occurs only above 55 mph. The most likely cause is:

A. Worn front shock absorbers

B. A bent pitman arm

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

D. Mismatched front tire pressures

18. The component on a heavy-truck steering linkage that synchronizes both front wheels during a turn is the:

A. Tie rod assembly

B. Drag link

C. Pitman arm

D. Sector shaft

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

A. Replace the steering gear immediately

B. Apply additional torque to the pitman arm nut

C. Adjust the over-center screw immediately

D. Inspect external linkage for wear before any internal gear adjustment

20. The component that supports vertical load between the steering knuckle and the lower face of the axle eye is the:

A. Upper kingpin bushing

B. Thrust bearing

C. Lower kingpin bushing

D. Sealing flange

21. A heavy-truck driver complains of slow steering response only at full-lock turns. The most likely cause is:

A. Worn front shock absorbers

B. Mismatched dual rear tires

C. Insufficient pump flow at full-lock conditions

D. Excessive caster on both front wheels

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

A. Verify wheel bearing condition and rear axle thrust angle

B. Replace the front shock absorbers

C. Re-torque the front spring U-bolts

D. Adjust the cab leveling valve

23. A heavy-truck driver complains that the chassis sits noticeably tilted to one side after sitting overnight, but resolves when the engine starts. The most likely cause is:

A. A bent rear axle

B. Worn fifth wheel locking jaws

C. Excessive sector shaft lash

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

24. The proper response when a heavy-truck driver complains of significant steering effort during low-speed cornering with foamy power steering fluid is:

A. Replace the steering gear

B. Inspect the suction line for air ingestion that produces cavitation

C. Re-torque the front spring U-bolts

D. Adjust the over-center screw

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

A. Lifting the rear axle off the ground

B. Disconnecting the trailer from the fifth wheel

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

D. Applying parking brakes during measurement

26. The proper response when a heavy-truck driver complains of a thumping sound at the fifth wheel during acceleration and braking transitions is:

A. Inspect kingpin lock-up clearance with a 2-inch kingpin gauge

B. Replace the rear shock absorbers

C. Re-torque the front spring U-bolts

D. Adjust the cab air suspension valve

27. The component on a heavy-truck integral hydraulic steering gear that establishes the gear's center mesh tightness is the:

A. Pitman arm

B. Recirculating ball

C. Torsion bar

D. Sector shaft

28. A heavy-truck rear suspension uses a walking-beam design. This architecture is typically chosen for:

A. Highway tractor applications with maximum fuel economy

B. Severe off-highway service such as concrete mixers

C. Light medium-duty delivery trucks

D. Bus chassis with air-spring requirements

29. The component on a heavy-truck rear suspension that resists side-to-side body roll during cornering is the:

A. Drag link

B. Pitman arm

C. Stabilizer bar

D. Torque rod

30. The proper response when a heavy-truck driver complains of slow steering response that improves as the engine warms is:

A. Recognize cold-fluid viscosity reducing pump output

B. Re-torque the front spring U-bolts

C. Replace the front shock absorbers

D. Adjust the cab leveling valve

31. The OSHA federal regulation that requires lockout/tagout procedures during heavy-truck servicing is:

A. 49 CFR 393, Subpart F

B. 29 CFR 1910.177

C. 49 CFR 393, Subpart G

D. 29 CFR 1910.147

32. 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

C. Mismatched front tire pressures

D. A bent pitman arm

33. The proper response when a heavy-truck driver complains that the truck "remembers" the last steering input and continues drifting after the wheel returns to center is:

A. Re-torque the front spring U-bolts

B. Replace the front shock absorbers

C. Inspect kingpin pivots and column U-joints for binding

D. Adjust the cab leveling valve

34. The component on a heavy-truck integral hydraulic steering gear that converts rotational input into linear motion is the:

A. Worm shaft and recirculating ball mechanism

B. Sector shaft

C. Pitman arm

D. Torsion bar

35. The proper response when a heavy-truck wheel speed sensor produces erratic signals only at low speeds is:

A. Replace the entire ABS controller

B. Increase tire inflation pressure

C. Adjust the cab leveling valve

D. Verify wheel bearing endplay falls within specification

36. 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. Install a new seal regardless of apparent condition

C. Apply gasket sealer to the seal lip

D. Heat the seal to soften it before installation

37. A heavy-truck driver complains of a clunking noise during cornering that is most pronounced when transitioning over rough pavement. The most likely cause is:

A. Loose front spring U-bolts

B. Excessive bearing preload at the wheel-end

C. Worn stabilizer bar end link bushings

D. A bent pitman arm

38. The proper response when a heavy-truck driver complains of a sudden onset of pull after a recent tire change is:

A. Inspect for tire conicity by swapping front tires

B. Replace the steering gear

C. Re-torque the front spring U-bolts

D. Adjust the cab leveling valve

39. 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

40. The proper response when a heavy-truck driver complains that the chassis sits significantly lower than design ride height is:

A. Replace the rear shock absorbers

B. Verify the height control valve linkage and inspect for a stuck valve

C. Drain the power steering reservoir

D. Re-torque the front spring U-bolts

41. A heavy-truck driver complains of grinding noise from a wheel-end on cornering. The most likely cause is:

A. Excessive caster on the front wheels

B. Mismatched dual rear tires

C. Bearing pitting and roller damage

D. Worn front shock absorbers

42. The proper response when a heavy-truck driver complains of a steady pull during straight-line driving and swapping the front tires reverses the pull is:

A. Diagnose tire conicity in one of the front tires

B. Re-torque the front spring U-bolts

C. Replace the steering gear

D. Adjust the cab leveling valve

43. The component on a heavy-truck integral hydraulic steering gear that limits maximum system pressure is the:

A. Flow control valve spool

B. Torsion bar

C. Sector shaft seal

D. Pressure relief valve

44. The proper response when a heavy-truck wheel has been operated with extremely loose nuts before being properly retorqued is:

A. Apply additional torque beyond specification

B. Inspect studs for damage and replace any showing fatigue cracks

C. Continue service if the nuts are now properly torqued

D. Add lock washers between the nuts and the wheel face

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

A. Apply a torque wrench to the link mounting bolts

B. Press on the bar with a dial indicator

C. Visually inspect bushings for cracks, tears, or elongation

D. Remove the bar from the chassis for bench inspection

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

A. Verify tire pressures and inspect tires for damage and conicity

B. Replace the front shock absorbers

C. Adjust toe at the tie rod adjusting sleeves

D. Disconnect the steering linkage at the pitman arm

47. The component on a heavy-truck rear suspension that mechanically links the axle to the height control valve is the:

A. Stabilizer bar end link

B. Pressure relief valve

C. Pitman arm extension

D. Linkage rod (height control link)

48. A heavy-truck driver complains of a high-pitched whining noise from the power steering pump that increases with engine RPM. The most likely cause is:

A. Worn fifth wheel locking jaws

B. Pump cavitation from low fluid level or air ingestion

C. Excessive bearing preload at the wheel-end

D. A bent pitman arm

49. The component on a heavy-truck steering linkage that connects the pitman arm to the left front steering knuckle is the:

A. Tie rod

B. Stabilizer bar

C. Drag link

D. Sector shaft

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

A. Inspect upper torque rod bushings on the rear suspension

B. Replace the front shock absorbers

C. Re-torque the front spring U-bolts

D. Adjust the cab leveling valve

PRACTICE EXAM 15: ANSWER KEY AND EXPLANATIONS

1. B — Equalizing beam. The equalizing beam pivots at its center, allowing one drive axle to rise while the other drops by an equal amount. This mechanical equalization keeps both axles loaded and in contact with the road regardless of road surface irregularities.

2. C — Insufficient pump output at idle from belt slip or wear. Slow steering response that improves as engine RPM increases indicates the pump is not delivering enough flow at low speeds. Belt slip and internal pump wear both produce this signature where higher RPM compensates for the underlying flow deficiency.

3. A — Disassemble the hub and replace the seal. A weeping seal indicates a failed sealing interface that requires complete service. The wear sleeve on the spindle may be damaged or worn, and reusing the existing seal would simply continue the failure pattern.

4. D — 0.001 to 0.005 inch. TMC RP 618 specifies this endplay range as the standard target for manually adjusted heavy-truck wheel bearings. Endplay below 0.001 inch indicates excessive preload causing heat damage; above 0.005 inch produces hub wobble and accelerated wear.

5. B — Inspect 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.

6. C — Bearing wear in both front wheel-ends. Vibration that intensifies during cornering on either side and decreases when traveling straight indicates bearing wear in both front wheels. The cornering load transfers additional weight to the affected bearing on each side, intensifying noise from each.

7. A — Torsion bar. 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.

8. D — Use a tire cage with a clip-on remote inflation chuck. OSHA 29 CFR 1910.177 requires multi-piece rim inflation inside a restraining device with a clip-on remote inflation chuck specifically to position the technician outside the trajectory zone. Multi-piece rim component failures during inflation can be fatal without these protections.

9. C — 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.

10. A — Excessive toe-out. Feathered wear with sharp edges pointing inward is the diagnostic signature of toe-out, where the tire is dragged sideways with each tread block scrubbing toward the inside.

11. D — The air-impermeable inner liner combined with sealed bead-to-rim contact. Tubeless tires hold air through the tire's own air-impermeable inner liner combined with the airtight seal between the tire bead and the wheel rim. No separate inner tube is required.

12. B — Torque rod. Air bags themselves cannot transmit longitudinal forces, so air-spring suspensions rely on torque rods to fix the axle's longitudinal position and resist axle wind-up under braking and acceleration.

13. C — Verify caster on both front wheels. Slow return-to-center after a turn indicates inadequate self-centering force, which positive caster provides. Verifying caster is the next diagnostic step when the symptom describes weak return-to-center behavior.

14. 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.

15. D — Verify equal brake function on both sides. Brake-related pull is a brake system fault, not an alignment or suspension fault. The diagnostic priority is to confirm equal brake performance side-to-side before considering other potential causes.

16. B — 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.

17. C — 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.

18. A — Tie rod assembly. The tie rod connects the left front steering knuckle to the right front steering knuckle through steering arms at each knuckle. When one knuckle pivots, the tie rod transmits the same motion to the other, ensuring both wheels turn together.

19. D — Inspect external linkage for wear before 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.

20. B — Thrust bearing. The thrust bearing sits between the lower face of the axle eye and the lower face of the steering knuckle, supporting the vertical load of the front wheel. Without an intact thrust bearing, the knuckle settles directly onto the axle eye, causing severe friction.

21. C — Insufficient pump flow at full-lock conditions. Slow steering response only at full-lock turns indicates the pump cannot deliver enough flow at peak demand. Pump wear, belt slip at low engine RPM, or fluid issues all produce this signature where the pump runs out of capacity at full-lock.

22. A — 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).

23. D — A leaking air bag or air supply line on the affected side. Tilt that resolves at engine start 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, masking the underlying leak.

24. B — Inspect the suction line for air ingestion that produces cavitation. 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.

25. C — 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.

26. A — Inspect kingpin lock-up clearance with a 2-inch kingpin gauge. A thumping sound during acceleration and braking transitions is the classic signature of excessive lock-up clearance, where the trailer kingpin has play within the locked jaws. The clearance must be checked with a 2-inch kingpin gauge and adjusted or jaws replaced if it exceeds 1/8 inch.

27. D — Sector shaft. The sector shaft's axial taper, combined with the over-center adjusting screw bearing against the shaft end, sets the gear's center mesh tightness. Tightening the screw advances the sector shaft into deeper mesh with the ball nut teeth, reducing lash at the gear's center position.

28. B — Severe off-highway service such as concrete mixers. 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.

29. C — Stabilizer bar. The stabilizer bar is a torsion bar that connects the left and right sides of the suspension. When body roll occurs, the bar twists and resists differential motion between the two sides, transferring load to reduce roll angle.

30. A — Recognize cold-fluid viscosity reducing pump output. Cold hydraulic fluid is significantly thicker than warm fluid, which reduces flow through the pump and gear. As the fluid warms, viscosity drops and steering response returns to specification.

31. D — 29 CFR 1910.147. This OSHA regulation governs the control of hazardous energy through lockout/tagout procedures. It applies to heavy-truck servicing whenever the engine could be started or systems could be inadvertently energized during the work.

32. B — An imbalanced wheel-and-tire assembly. 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.

33. C — Inspect kingpin pivots and column U-joints for binding. Memory steer is caused by binding components that prevent the steering system from naturally returning to its centered position. The binding holds the system in the last steering direction even after the driver releases input.

34. A — Worm shaft and recirculating ball mechanism. The worm shaft on the input side rotates as the steering wheel turns, and steel ball bearings circulating between the worm threads and ball nut threads translate the ball nut linearly. This linear motion drives the sector gear that produces pitman arm rotation.

35. D — Verify wheel bearing endplay falls within specification. At low speeds, hub wobble produces detectable variation in the sensor-to-tone-ring air gap, generating erratic ABS readings. At highway speed, the rotational momentum stabilizes the hub motion and the ABS signal becomes consistent.

36. B — Install a new seal regardless of apparent condition. 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.

37. C — Worn stabilizer bar end link bushings. A clunking noise during cornering and uneven pavement transitions is the diagnostic signature of worn stabilizer bar end link bushings. The bushings allow the bar to disengage partially, producing the cornering-specific noise.

38. A — Inspect for tire conicity by swapping front tires. Pull that begins suddenly after a tire change points strongly to the new tire as the cause. Swapping the front tires side-to-side will reverse the pull direction if conicity is the cause, providing rapid diagnostic confirmation.

39. 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.

40. B — Verify the height control valve linkage and inspect for a stuck valve. Chassis ride height below specification 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.

41. C — Bearing pitting and roller damage. Grinding noise from a wheel-end on cornering is the diagnostic signature of bearing damage. The cornering load intensifies the noise from the worn surfaces, and replacement is the only acceptable response.

42. A — Diagnose tire conicity in one of the front tires. When swapping front tires reverses the pull direction, the cause is tied to the tire itself rather than alignment, brakes, or suspension. Conicity creates a constant lateral force at the contact patch that follows whichever side the affected tire is mounted on.

43. D — Pressure relief valve. The pressure relief valve opens when system pressure exceeds the maximum design value, typically 1,500 to 2,200 psi, protecting pump seals, hose assemblies, and gear seals from rupture during full-lock turns.

44. B — Inspect studs for damage and replace any showing fatigue cracks. Loose-nut operation flexes the studs under each wheel rotation, initiating fatigue cracks that may not be visible without close inspection. A wheel run on extremely loose nuts is a candidate for stud replacement, not just retorque.

45. C — Visually inspect bushings for cracks, tears, or elongation. The stabilizer bar's wear points are the rubber bushings at the frame mount and end links. Visual inspection of these components for cracks, tears, and elongation is the most efficient and reliable inspection technique.

46. A — Verify tire pressures and inspect tires for damage and conicity. 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.

47. D — Linkage rod (height control link). The linkage rod connects the height control valve's lever arm to a reference point on the axle, allowing the valve to sense axle position. As the axle moves up or down relative to the frame, the lever rotates and opens the appropriate fluid passage.

48. B — Pump cavitation from low fluid level or air ingestion. A whining pump that intensifies with engine RPM is the classic signature of cavitation, where vapor bubbles form in the suction side because fluid is insufficient or air is being drawn in.

49. C — 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.

50. A — Inspect 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.