

PRACTICE EXAM 17: ASE T5 SIMULATION (50 QUESTIONS)

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

- A. Tie rod assembly
- B. Pitman arm
- C. Drag link
- D. Sector shaft

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

- A. A bent pitman arm
- B. Mismatched dual rear tires
- C. Insufficient pump output at idle
- D. Excessive bearing endplay at the wheel-end

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

- A. Drag link
- B. Torque rod
- C. Stabilizer bar
- D. Pitman arm

4. 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. Adjust the cab leveling valve
- D. Verify caster on both front wheels

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

- A. Thrust bearing
- B. Upper kingpin bushing
- C. Lower kingpin bushing
- D. Sealing flange

6. 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. Mismatched front tire pressures
- C. An imbalanced wheel-and-tire assembly
- D. A bent pitman arm

7. 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 pump
- B. Apply additional torque to the pitman arm nut

- C. Adjust the over-center screw immediately
- D. Inspect external linkage components for wear

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

- A. 49 CFR 393, Subpart F
- B. 29 CFR 1910.147
- C. 29 CFR 1910.177
- D. 49 CFR 393, Subpart G

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

- A. Verify the height control valve linkage and inspect for a stuck valve
- B. Replace the rear shock absorbers
- C. Drain the power steering reservoir
- D. Re-torque the front spring U-bolts

10. 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

11. 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. Verify wheel bearing endplay falls within specification
- D. Adjust the cab leveling valve

12. A heavy-truck driver complains of significant steering effort during low-speed cornering with foamy power steering fluid. The most likely cause is:

- A. Excessive caster on the front wheels
- B. Air ingestion into the suction line producing cavitation
- C. A bent pitman arm
- D. Mismatched front tire pressures

13. The proper response when a heavy-truck driver complains of accelerated front tire wear with feathered edges pointing toward the inside of the tread is:

- A. Adjust toe to correct excessive toe-out
- B. Replace the front shock absorbers
- C. Re-torque the front spring U-bolts
- D. Adjust the cab leveling valve

14. 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

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 rear suspension that allows two drive axles to share load is the:

- A. Drag link
- B. Equalizing beam
- C. Stabilizer bar
- D. Pitman arm

17. 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. Inspect kingpin pivots and column U-joints for binding
- B. Re-torque the front spring U-bolts
- C. Replace the front shock absorbers
- D. Adjust the cab leveling valve

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

- A. Excessive bearing endplay on front wheels
- B. Off-center steering wheel position
- C. Reduced maximum pressure during a full-lock dead-head test
- D. Erratic ABS engagement during normal driving

19. The proper response when a heavy-truck driver complains of vibration that occurs only above 55 mph is:

- A. Re-torque the front spring U-bolts
- B. Replace the front shock absorbers
- C. Adjust the cab leveling valve
- D. Identify the speed-dependent wheel-and-tire imbalance

20. A heavy-truck driver complains of vibration that intensifies during right-hand cornering and decreases during left-hand cornering. The most likely cause is:

- A. Excessive caster on the right front wheel
- B. A worn right front wheel bearing
- C. Mismatched front tire pressures
- D. Excessive front tire pressure

21. 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

22. 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 tire cage with a clip-on remote inflation chuck
- D. Use a hand-held inflation chuck for precise control

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

- A. Pressure relief valve
- B. Flow control spool
- C. Sector shaft
- D. Torsion bar

24. 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. Identify and correct the leak source before topping off
- C. Apply additional grease to compensate
- D. Drain and refill with a different fluid grade

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

- A. Insufficient pump flow at full-lock conditions
- B. Worn front shock absorbers
- C. Mismatched dual rear tires
- D. Excessive caster on both front wheels

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

- A. Re-torque the front spring U-bolts
- B. Replace the front shock absorbers
- C. Inspect upper torque rod bushings on the rear suspension
- D. Adjust the cab leveling valve

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

- A. Flow control valve spool
- B. Pressure relief valve
- C. Torsion bar
- D. Sector shaft seal

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

- A. Re-torque the front spring U-bolts

- B. Replace the rear shock absorbers
- C. Adjust the cab air suspension valve
- D. Inspect kingpin lock-up clearance with a 2-inch kingpin gauge

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

- A. Severe off-highway service such as concrete mixers
- B. Highway tractor applications with maximum fuel economy
- C. Light medium-duty delivery trucks
- D. Bus chassis with air-spring requirements

30. 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
- C. Install a new seal regardless of apparent condition
- D. Heat the seal to soften it before installation

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

- A. Cab tilt mechanism
- B. Slider lock pin engaging the slider rails
- C. Pintle hook on the rear bumper
- D. Pivot point at the kingpin contact surface

32. A heavy-truck driver complains of a sudden onset of pull after a recent tire change. The most likely cause is:

- A. Worn rear torque rod bushings
- B. Excessive caster on the affected wheel
- C. A bent pitman arm
- D. A new tire with internal conicity defect

33. 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

34. 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. The air-impermeable inner liner combined with sealed bead-to-rim contact
- D. A factory-applied sealant inside the tire body

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

- A. Replace the steering gear
- B. Inspect steering U-joints and intermediate shaft splines

- C. Re-torque the front spring U-bolts
- D. Adjust the cab leveling valve

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

- A. Toe
- B. Camber
- C. Thrust angle
- D. Steering axis inclination (SAI/KPI)

37. The proper response when a heavy-truck driver complains of grinding noise from a wheel-end on cornering is:

- A. Inspect the bearing for pitting and roller damage
- B. Replace the front shock absorbers
- C. Adjust the cab leveling valve
- D. Re-torque the front spring U-bolts

38. 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. 0.001 to 0.005 inch
- D. 0.010 to 0.015 inch

39. 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. Excessive bearing preload at the wheel-end
- B. Worn stabilizer bar end link bushings
- C. Loose front spring U-bolts
- D. A bent pitman arm

40. 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. Sector shaft
- D. Drag link

41. The proper response when a heavy-truck driver complains that the chassis sits noticeably tilted to one side after sitting overnight, but resolves when the engine starts is:

- A. Inspect for a leaking air bag or air supply line
- B. Re-torque the front spring U-bolts
- C. Replace the rear shock absorbers
- D. Adjust the cab leveling valve

42. 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

43. 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

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

- A. Replace the front shock absorbers
- B. Adjust toe at the tie rod adjusting sleeves
- C. Disconnect the steering linkage at the pitman arm
- D. Verify tire pressures and inspect for damage and conicity

45. 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

46. 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. A bent pitman arm
- C. Pump cavitation from low fluid level or air ingestion
- D. Excessive bearing preload at the wheel-end

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

- A. Top off the oil and continue normal service
- B. Apply a polymer sealing compound around the seal
- C. Replace only the hub cap
- D. Disassemble the hub and replace the seal

48. 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. Linkage rod (height control link)
- C. Pressure relief valve
- D. Pitman arm extension

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

- A. Visually inspect bushings for cracks, tears, or elongation
- B. Apply a torque wrench to the link mounting bolts
- C. Press on the bar with a dial indicator
- D. Remove the bar from the chassis for bench inspection

50. 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. Re-torque the front spring U-bolts
- B. Replace the steering gear
- C. Diagnose tire conicity in one of the front tires
- D. Adjust the cab leveling valve

PRACTICE EXAM 17: ANSWER KEY AND EXPLANATIONS

1. 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.
2. C — Insufficient pump output at idle. 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. 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.
4. D — 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.
5. A — 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.
6. C — 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.
7. D — Inspect external linkage components for wear. 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.
8. B — 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.
9. A — 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.

10. 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.
11. C — 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.
12. B — Air ingestion into the suction line producing 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.
13. A — Adjust toe to correct 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. Correcting toe at the tie rod adjusting sleeves resolves the wear pattern.
14. 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.
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 — 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.
17. A — 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.
18. C — 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.
19. D — Identify the speed-dependent wheel-and-tire imbalance. 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.

20. B — A worn right front wheel bearing. Vibration that intensifies during right-side cornering and decreases during left-side cornering indicates a bearing that loads more heavily during right-side cornering. The cornering load transfers additional weight to the right wheel, intensifying noise from the worn bearing.
21. 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).
22. C — 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.
23. D — 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.
24. 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.
25. A — 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.
26. C — 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.
27. B — 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.
28. D — 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.
29. A — 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.

30. C — 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.
31. B — 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.
32. D — A new tire with internal conicity defect. Pull that begins suddenly after a tire change points strongly to the new tire as the cause. Internal tire conicity creates a constant lateral force at the contact patch that produces a steady pull regardless of pressure, alignment, or driving conditions.
33. 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.
34. C — 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.
35. 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.
36. 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.
37. A — Inspect the bearing for 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.
38. C — 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.
39. B — 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.
40. D — 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.

41. A — Inspect for a leaking air bag or air supply line. 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.
42. 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.
43. 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 retorquing.
44. D — Verify tire pressures and inspect 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.
45. 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.
46. C — 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.
47. D — 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.
48. B — 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.
49. A — 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.
50. C — 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.