PRACTICE EXAM 9: T3 SIMULATION (40 QUESTIONS)

DOMAIN A — CLUTCH (Questions 1–11)

1. A heavy-duty Class 8 tractor with 350,000 miles arrives with a complaint that the clutch operates normally for the first 30 minutes of driving, then begins slipping under heavy load on grades. Once the truck stops and the clutch cools for an hour, normal operation resumes. The most likely cause is:

A. Air introduced into the hydraulic system that expands during operation

B. Failed pilot bearing producing intermittent resistance during engagement

C. Glazed clutch facings that lose grip as components reach thermal saturation

D. Worn release bearing producing inconsistent pedal response during operation

2. The proper diagnostic priority when a fleet shows multiple Class 8 tractors with the same complaint of "clutch failure within 75,000 miles of replacement" by the same outside repair facility is to:

A. Investigate installation procedures and parts quality at the outside facility

B. Replace all clutches as preventive maintenance regardless of current condition

C. Apply battery voltage to clutch components for diagnostic verification

D. Adjust the throttle linkage at the engine for proper shift coordination

3. The most accurate description of heavy-duty pull-type clutch operation is:

A. Release bearing pushes pressure plate fingers toward flywheel for engagement

B. Hydraulic pressure applied to the disc through the slave cylinder for engagement

C. Spring-loaded mechanism that pushes the disc against the flywheel face

D. Release bearing pulls pressure plate fingers rearward to release clamping force

4. The LEAST likely cause of a heavy-duty truck clutch that develops sudden complete release failure during normal operation is:

A. Catastrophic master cylinder seal failure preventing hydraulic pressure development

B. Worn clutch facings reaching minimum thickness gradually over extended service

C. Sudden hydraulic line failure or fitting separation during normal operation

D. Slave cylinder pushrod separation or internal cylinder failure during operation

5. A heavy-duty truck arrives with a complaint of clutch slip combined with brake fade on the rear axle on the same side. The most likely common cause is:

A. Failed wheel seal allowing gear oil onto brake friction surfaces and clutch contamination through return line

B. Worn clutch facings affecting only the clutch system during operation

C. Brake fade unrelated to clutch operation requiring separate diagnostic procedures

D. A failed coolant temperature sensor reading falsely cold to the engine ECM

6. The proper procedure when installing a new heavy-duty clutch on a flywheel that has not been resurfaced is to:

A. Apply battery voltage to the assembly for diagnostic testing during installation

B. Install the new clutch and immediately return the truck to service for testing

C. Verify flywheel surface condition meets specification before installation begins

D. Resurface the flywheel regardless of condition to ensure new clutch service life

7. A heavy-duty truck with manual transmission shows a complaint of "harsh shifting that gets worse as the truck warms up." The most likely root cause is:

A. Worn synchronizer rings in the transmission affecting all gear engagement

B. A failed coolant temperature sensor reading falsely cold to the engine ECM

C. Worn clutch facings affecting all engagement events during operation

D. Air in the clutch hydraulic system that expands with thermal increase, reducing release

8. The most accurate description of clutch internal adjustment purpose is to:

A. Set external pedal free play during normal operating conditions

B. Compensate for clutch facing wear by repositioning pressure plate fingers

C. Control clutch brake engagement timing during pedal application

D. Adjust the throttle linkage at the engine for proper coordination during shifts

9. The proper measurement procedure for heavy-duty clutch facing remaining thickness is to:

A. Measure remaining facing material from the disc surface to the rivet head locations

B. Apply battery voltage to the clutch facings for diagnostic testing during measurement

C. Listen for facing wear with a stethoscope at idle conditions during operation

D. Replace the clutch as preventive maintenance regardless of facing measurement values

10. The LEAST likely consequence of operating a heavy-duty truck with a clutch brake that is severely worn beyond service specification is:

A. Grinding when shifting from neutral into starting gears at a complete stop

B. Driver complaint of difficulty achieving smooth engagement of starting gears

C. Accelerated wear on transmission engagement components from input shaft rotation

D. Loss of all forward gear engagement requiring complete transmission replacement

11. The proper service action when a heavy-duty pull-type clutch shows oil contamination from a failed transmission input shaft seal is to:

A. Clean the friction surfaces with brake cleaner and reinstall the assembly during service

B. Replace the input shaft seal AND replace the contaminated clutch components together

C. Continue operation since oil contamination clears with extended use during operation

D. Apply battery voltage to the clutch components for diagnostic testing during service

DOMAIN B — TRANSMISSION (Questions 12–24)

12. A heavy-duty AMT shows a fault code referencing the X-Y shifter combined with reports of "stuck in gear and won't shift" during operation. The proper first action is to:

A. Replace the X-Y shifter assembly as the primary repair component during service

B. Apply battery voltage to the shifter for diagnostic verification during service

C. Replace the entire transmission as preventive maintenance during the same service

D. Verify air supply pressure, electrical connections, and scan tool data systematically

13. The proper diagnostic sequence when a heavy-duty manual transmission shows a complaint of "grinding into all gears" is to:

A. Verify clutch hydraulic system operation and clutch release before transmission disassembly

B. Replace the transmission as preventive maintenance during the same service event

C. Apply battery voltage to the transmission for diagnostic testing during service

D. Listen for grinding with a stethoscope at idle without addressing the root cause

14. A heavy-duty AMT clutch actuator shows commanded position of 50% but actual position of 95%. The most likely cause is:

A. Failed coolant temperature sensor reading falsely cold to the engine ECM

B. TCM software calibration issues requiring manufacturer reflash during service

C. Mechanical linkage adjustment problem between actuator and clutch fork

D. Worn clutch facings causing partial engagement during normal operations

15. The most accurate description of heavy-duty manual transmission shift fork wear progression is:

A. Sudden complete failure with no warning during normal operation events

B. Gradual fork pad wear, then jumping out of gear, then complete engagement loss

C. Loss of all forward gears simultaneously during normal operation conditions

D. External case warpage requiring complete transmission replacement immediately

16. The proper torque application sequence for a heavy-duty transmission case bolts during reassembly is:

A. Random sequence with calibrated torque wrench at final specification

B. Outside corners working toward the center of the case during installation

C. Maximum torque applied to one bolt before moving to the next bolt

D. Center bolts first, then star pattern outward in stages to specification

17. A heavy-duty manual transmission produces a high-pitched squeal that varies with engine RPM and is present in all gears including neutral with the clutch engaged. The most likely cause is:

A. Worn input shaft bearing carrying load during all engine rotation conditions

B. Worn synchronizer rings affecting only specific gear engagements during operation

C. A failed coolant temperature sensor reading falsely cold to the engine ECM

D. Worn output shaft bearing producing noise only during driven operation

18. The LEAST likely cause of a heavy-duty AMT that fails to engage any forward gear from neutral is:

A. Failed clutch hydraulic system preventing complete clutch release during shifts

B. Damaged shift rail interlock preventing rail movement during shift attempts

C. A failed coolant temperature sensor reading falsely cold to the engine ECM

D. TCM communication failure preventing shift command transmission to actuators

19. The proper service action when a heavy-duty manual transmission shows lubricant contamination with water emulsion during analysis is to:

A. Continue operation since water contamination has minimal effect during operation

B. Drain contaminated lubricant, identify water entry source, and refill with proper fluid

C. Apply battery voltage to the transmission for diagnostic testing during service

D. Add lubricant additive to absorb the water during normal operation conditions

20. The most likely cause of a heavy-duty AMT that produces harsh engagement during launch from a complete stop is:

A. Clutch actuator stroke calibration error or mechanical linkage adjustment problem

B. Worn synchronizer rings preventing first gear engagement during launch

C. A failed coolant temperature sensor reading falsely cold to the engine ECM

D. Worn ring and pinion gears in the rear drive axle assembly during operation

21. The proper diagnostic priority when a heavy-duty manual transmission shows "intermittent jumping out of high range under heavy load" is to:

A. Replace the entire transmission as preventive maintenance during the same service

B. Apply battery voltage to the transmission for diagnostic testing during service

C. Verify air supply pressure, range valve operation, and detent component condition

D. Listen for the symptom with a stethoscope at idle without addressing root cause

22. A fleet maintenance manager reports three heavy-duty AMT transmissions with the same complaint of "harsh downshifts under braking" within the same delivery model year. The most likely common cause is:

A. Random failure of three transmissions requiring complete replacement on each

B. Worn clutch facings on all three units affecting downshift quality during operation

C. Engine and TCM calibration mismatch from a software update applied to the fleet

D. A failed coolant temperature sensor reading falsely cold on all three units

23. The most accurate description of an Eaton Fuller 18-speed transmission is:

A. Five-speed direct-drive with synchronized splitter ratios in all positions

B. Five-speed main case with high/low range and splitter activation in both ranges

C. Eight-speed main case with high range only and no splitter capability

D. Three-speed main case with quad-range auxiliary section design during operation

24. The LEAST likely cause of a heavy-duty manual transmission that produces a knocking noise that varies with engine RPM and is present only when the clutch is engaged is:

A. Worn input shaft bearing producing noise during clutch engagement only

B. Damaged input shaft splines producing noise during clutch engagement

C. Worn clutch disc dampener springs producing noise during engagement

D. A failed coolant temperature sensor reading falsely cold to the engine ECM

DOMAIN C — DRIVESHAFT AND U-JOINTS (Questions 25–31)

25. A heavy-duty truck shows a complaint of "vibration that increases progressively over the past 50,000 miles." Tire and wheel balance is verified correct. The most likely cause is:

A. Progressive U-joint wear from extended service in the driveshaft assembly

B. Recent collision damage affecting the driveshaft components during operation

C. A failed coolant temperature sensor reading falsely cold to the engine ECM

D. Manufacturing defect in the original driveshaft components from production

26. The proper diagnostic approach when a heavy-duty truck driveshaft shows free play at the U-joints during inspection is to:

A. Continue operation since some free play is normal during high-mileage operation

B. Apply lubricant to the U-joints to compensate for the free play during service

C. Replace the worn U-joints and inspect adjacent components for related damage

D. Apply battery voltage to the U-joints for diagnostic testing during service

27. The most likely consequence of operating a heavy-duty truck with a driveshaft that has unequal U-joint operating angles is:

A. Improved fuel economy from reduced driveshaft rotational mass during operation

B. Torsional vibration, accelerated U-joint wear, and progressive driveline component damage

C. Loss of vehicle steering control during normal highway operation conditions

D. Loss of all forward gear engagement requiring transmission replacement

28. A heavy-duty truck shows a vibration complaint that occurs only at specific RPM ranges in highway operation. The most likely cause is:

A. Worn slip joint causing length compensation problems during cycling operations

B. Failed center support bearing rubber mount allowing excessive driveshaft movement

C. A failed coolant temperature sensor reading falsely cold to the engine ECM

D. Resonance condition from imbalance, U-joint wear, or operating angle problems

29. The proper procedure when reinstalling a heavy-duty driveshaft after service is to:

A. Align reference marks made during removal to maintain proper phasing and balance

B. Install the driveshaft in any orientation during the reinstallation procedure

C. Apply battery voltage to the components during the reinstallation procedure

D. Replace all U-joints regardless of condition during the reinstallation procedure

30. The LEAST likely cause of a heavy-duty driveshaft that shows surface galling at the slip joint splines is:

A. Inadequate lubrication allowing metal-to-metal contact during length changes

B. Excessive operating angles forcing the splines into binding contact during cycling

C. A failed coolant temperature sensor reading falsely cold to the engine ECM

D. Manufacturing defect in the original spline machining during the production process

31. The most accurate description of heavy-duty driveshaft balance verification is:

A. Required after every U-joint replacement during routine service procedures

B. Performed annually as preventive maintenance regardless of vibration symptoms

C. Required only after major collision damage to the driveshaft components

D. Performed when vibration symptoms appear, using balance machine or wheel-weight method

DOMAIN D — DRIVE AXLE (Questions 32–40)

32. A heavy-duty Class 8 tractor with 600,000 miles shows a complaint of "humming noise at highway speed that has gradually worsened over the past 100,000 miles." The most likely cause is:

A. Sudden ring and pinion gear damage from a recent operating event during service

B. Progressive ring and pinion gear wear from extended fleet service in the application

C. A failed coolant temperature sensor reading falsely cold to the engine ECM

D. Recent collision damage affecting the drive axle components during operation

33. The proper service action when a heavy-duty drive axle shows lubricant analysis with elevated wear metals AND moisture content is to:

A. Drain the contaminated fluid, inspect for both wear sources and water entry sources, and refill

B. Continue operation since lubricant contamination has minimal effect during operation

C. Apply battery voltage to the drive axle for diagnostic testing during service

D. Replace the drive axle assembly as preventive maintenance during the same service

34. The most likely consequence of returning a heavy-duty truck to service with a drive axle wheel seal that has progressed beyond minor weeping to visible drip is:

A. Improved drive axle service life from reduced lubricant temperature during operation

B. No effect on drive axle or brake components during normal operation conditions

C. Brake friction surface contamination requiring complete brake friction component replacement

D. A failed coolant temperature sensor reading falsely cold to the engine ECM

35. The proper diagnostic priority when a heavy-duty tandem drive axle shows "noise that varies between drive and coast conditions" is to:

A. Replace both axle assemblies as preventive maintenance during the same service

B. Apply battery voltage to the axles for diagnostic testing during service

C. Listen for noise with a stethoscope without any disassembly during inspection

D. Inspect drive-side and coast-side ring and pinion tooth flanks and verify backlash

36. The LEAST likely cause of a heavy-duty drive axle that develops a leak at the inter-axle differential output shaft seal area is:

A. A failed coolant temperature sensor reading falsely cold to the engine ECM

B. Worn output shaft seal that has reached the end of its service life

C. Excessive bearing wear allowing radial movement of the shaft surface

D. Damaged sealing surface on the output shaft from improper handling

37. A driver reports that the truck has been "driving fine but I locked the IAD on the highway during heavy rain to be safe." The most likely consequence requiring immediate inspection is:

A. Improved fuel economy from the locked IAD configuration during rain conditions

B. Drivetrain windup, tire scuffing, and possible component damage from highway IAD lock engagement

C. No effect on drive axle components from the IAD lock engagement during operation

D. A failed coolant temperature sensor reading falsely cold to the engine ECM

38. The proper service action when a heavy-duty drive axle shows ring gear runout exceeding service specification is to:

A. Apply battery voltage to the ring gear for diagnostic testing during service

B. Continue operation since runout has minimal effect on drive axle operation

C. Investigate the cause (carrier damage, improper installation, ring gear damage) and correct

D. Listen for runout-related noise with a stethoscope without addressing the root cause

39. The most likely cause of a heavy-duty drive axle that produces a clunking noise only during throttle transitions is:

A. Worn ring and pinion gear teeth from extended service during operation

B. Insufficient gear oil level affecting all operating conditions equally

C. A failed coolant temperature sensor reading falsely cold to the engine ECM

D. Excessive backlash between ring and pinion allowing tooth separation under no load

40. The proper procedure when a heavy-duty drive axle requires complete bearing replacement is to:

A. Replace bearings only without disturbing the ring and pinion mesh setup procedure

B. Reset all preload, depth, and backlash specifications during the reassembly process

C. Apply battery voltage to the components for diagnostic testing during service

D. Reuse existing shims regardless of bearing replacement during the rebuild process

ANSWER KEY AND EXPLANATIONS

DOMAIN A — CLUTCH

1. C — Slip that develops only after extended operation and resolves with cooling indicates glazed clutch facings that lose grip as components reach thermal saturation. The clutch operates normally when cool because clamping force is adequate; as operating temperature increases, the glazed surfaces lose friction coefficient and slip develops. Cooling restores normal operation until heat builds again.
2. A — Multiple trucks from the same outside facility showing identical premature failure patterns indicate a systemic issue at that facility — typically improper installation procedures or substandard parts quality. The proper diagnostic priority is investigating the source of the common failure rather than blanket replacement on all units, which doesn't address the root cause of repeat problems.
3. D — Pull-type clutch operation requires force to pull the release bearing rearward (away from the flywheel), which pulls the pressure plate fingers rearward to release clamping force. This is opposite to push-type designs where force pushes the bearing toward the flywheel. Most modern heavy-duty Class 8 applications use pull-type designs for the higher capacity needed.
4. B — Worn clutch facings reaching minimum thickness produces gradual slip progression, not sudden complete release failure. The other choices all describe conditions that produce sudden release failure: master cylinder seal failure prevents pressure development, hydraulic line failure eliminates pressure transmission, and slave cylinder failure prevents pushrod motion.
5. A — A failed wheel seal allowing gear oil onto brake friction surfaces explains the brake fade on that side, and oil migration through the chassis can contaminate clutch components in some configurations. The combination of symptoms on the same side points to a single seal failure as the common cause. Investigating the wheel seal addresses both complaints simultaneously.
6. C — Installing a new clutch on an unresurfaced flywheel requires verification that the flywheel surface meets specification (runout, thickness, surface condition) before installation. A flywheel with surface defects, excessive runout, or insufficient thickness damages new clutch facings and produces premature failure. Resurfacing is required only when needed; not all flywheels require resurfacing during clutch service.
7. D — Air in the clutch hydraulic system expands with thermal increase, reducing release effectiveness as the engine warms up. Reduced release means the clutch doesn't fully disengage during shifts, producing harsh shifting that worsens with temperature. Heavy-duty manual

transmissions are non-synchronized, so synchronizer wear is not applicable; ECT errors don't affect clutch operation directly.

8. B — Internal adjustment compensates for clutch facing wear by repositioning the pressure plate fingers as facings wear thinner. Without internal adjustment, the pressure plate fingers move closer to the release bearing as facings wear, eventually causing partial release or slip. External pedal free play is a separate adjustment at the master cylinder pushrod.

9. A — Clutch facing remaining thickness is measured from the disc surface to the rivet head locations. The specification establishes the minimum allowable thickness before rivet contact with the flywheel or pressure plate would damage both surfaces. The rivets become the wear indicator; facing material above the rivet heads is the remaining service material.

10. D — Loss of all forward gears requiring complete transmission replacement is not a typical consequence of worn clutch brake. The other choices all describe direct effects of clutch brake wear: grinding during stopped engagement, difficulty engaging starting gears, and accelerated transmission wear from input shaft rotation. Complete transmission failure typically requires more severe damage than clutch brake wear alone.

11. B — Oil-contaminated clutch components require both seal replacement (to address the contamination source) and clutch component replacement (to remove the contaminated friction surfaces). Cleaning contaminated facings does not restore the original friction coefficient because oil penetrates the porous friction material. Both actions are required to restore proper clutch function and prevent recurrence.

DOMAIN B — TRANSMISSION

12. D — X-Y shifter fault with stuck-in-gear symptoms requires systematic verification of air supply pressure (pneumatic actuators won't move without adequate pressure), electrical connections (the X-Y shifter requires power and signal), and scan tool data (commanded vs. actual position). Systematic diagnosis identifies the specific fault location before parts replacement.

13. A — Grinding into all gears requires verification of clutch hydraulic system operation and complete clutch release before transmission disassembly. The clutch is the most likely cause of "all gears" symptoms because incomplete release affects every gear engagement. Checking the clutch first prevents unnecessary transmission disassembly when the actual problem is hydraulic.

14. C — A 50% commanded position with 95% actual position indicates the actuator is moving more than commanded, typically caused by mechanical linkage adjustment problems between actuator and clutch fork. The actuator may be functioning correctly, but linkage geometry produces excessive movement at the clutch. Linkage adjustment corrects the mismatch without replacing electronic components.

15. B — Shift fork wear follows a predictable progression: gradual fork pad wear (gradual reduction in engagement quality), then jumping out of gear (worn pads cannot maintain engagement under

load), then complete engagement loss as wear progresses to total failure. Recognition of early stages allows intervention before complete failure occurs.

16. D — Transmission case bolt torque sequence starts at the center bolts and works outward in a star pattern in stages, building from initial torque to final specification. This sequence ensures even clamping force across the case without distortion. Random sequences and corner-first patterns produce uneven clamping that causes leakage or case damage.

17. A — A high-pitched squeal that varies with engine RPM and is present in all gears including neutral (with clutch engaged) indicates worn input shaft bearing. The input shaft rotates whenever the engine drives the clutch, regardless of gear selection. The bearing carries load continuously when engaged, producing engine-RPM-related noise. Other bearings would produce different conditions.

18. C — ECT sensor errors affect engine fuel mixture but do not prevent transmission gear engagement. The other choices all describe direct causes of failure to engage forward gears: failed clutch prevents release, damaged interlock prevents rail movement, and TCM communication failure prevents shift commands from reaching actuators.

19. B — Water emulsion in transmission lubricant requires draining the contaminated lubricant, identifying the water entry source (failed seal, vent damage, condensation), and refilling with proper fluid. Water destroys lubricant additive packages and accelerates wear; allowing operation with contaminated fluid causes progressive damage. Source identification prevents recurrence.

20. A — Harsh AMT engagement during launch typically indicates clutch actuator stroke calibration error or mechanical linkage adjustment problem. The actuator must engage the clutch smoothly during launch; calibration errors or mechanical problems produce abrupt engagement. AMTs don't use synchronizers; ECT errors don't affect clutch engagement directly; drive axle wear doesn't affect launch quality.

21. C — Intermittent jumping out of high range under load requires verification of air supply pressure (insufficient pressure can't hold range), range valve operation (worn or stuck valves can't maintain engagement), and detent component condition (worn detents allow disengagement under load). Systematic verification identifies the specific cause before parts replacement.

22. C — Three transmissions with the same harsh-downshift symptom within the same model year and after a software update indicates engine and TCM calibration mismatch from the software update. Calibration issues can affect all units that received the update, producing identical symptoms. Random failure of three units is statistically unlikely; clutch wear and ECT errors don't produce this specific pattern.

23. B — The Eaton Fuller 18-speed uses a 5-speed main case with high/low range and splitter activation in both ranges. The configuration produces 9 forward ratios in low range (5 standard

plus 4 splitter steps) and 9 in high range, totaling 18 forward gears. This is the standard 18-speed architecture in heavy-duty Class 8 applications.

24. D — ECT sensor errors affect engine fuel mixture but do not produce knocking noise during clutch engagement. The other choices all describe direct sources of clutch-engaged knocking: input shaft bearing wear, damaged input shaft splines, and worn dampener springs all produce noise that appears with clutch engagement and varies with engine RPM.

DOMAIN C — DRIVESHAFT AND U-JOINTS

25. A — Progressive vibration over 50,000 miles is consistent with progressive U-joint wear from extended service. U-joints accumulate wear with each rotation and operating cycle; the wear progresses gradually until vibration becomes noticeable, then continues to increase as the wear advances. Recent collision damage would produce sudden onset, not gradual progression. Manufacturing defects would appear earlier.

26. C — Detectable U-joint free play indicates worn bearing caps requiring U-joint replacement. The proper service includes inspection of adjacent components (yoke ears, slip joint, driveshaft tube) for related damage caused by the worn U-joint operation. Lubrication does not restore worn U-joint surfaces; continued operation produces progressive damage to other components.

27. B — Unequal U-joint operating angles produce torsional vibration (from velocity fluctuations that don't cancel), accelerated U-joint wear (from continuous stress), and progressive driveline component damage as the vibration affects connected components. The combination of effects compounds over time, causing failures throughout the driveline if not corrected.

28. D — RPM-specific vibration in highway operation indicates a resonance condition from imbalance, U-joint wear, or operating angle problems. The resonance amplifies the underlying issue at specific frequencies that match driveshaft natural frequency. The symptom is unique to resonance phenomena where mechanical excitation matches system natural frequency, producing maximum vibration at specific speeds.

29. A — Driveshaft reinstallation requires aligning reference marks made during removal to maintain proper phasing and balance. Phasing alignment ensures U-joint angles cancel velocity fluctuations; balance preservation prevents introducing new vibration. Random orientation can introduce phasing errors and balance problems that did not exist before service.

30. C — ECT sensor errors do not affect driveshaft slip joint splines. The other choices all describe direct causes of slip joint galling: inadequate lubrication allows metal-to-metal contact, excessive operating angles force binding contact, and manufacturing defects produce abnormal wear patterns. ECT is unrelated to driveshaft mechanical components.

31. D — Driveshaft balance verification is performed when vibration symptoms appear, using a balance machine (precision shop service) or wheel-weight method (field service). Balance is not required after every U-joint replacement on most applications; annual checks are not standard

practice; collision damage isn't the only cause of imbalance. Symptom-based service is the industry standard approach.

DOMAIN D — DRIVE AXLE

32. B — Progressive humming noise over 100,000 miles on a 600,000-mile tractor indicates progressive ring and pinion gear wear from extended fleet service. Ring and pinion gears accumulate wear with each rotation; the wear progresses gradually, producing increasing noise as tooth surfaces deteriorate. Sudden damage would produce abrupt onset; recent collision damage would appear suddenly; ECT errors don't produce drive axle noise.

33. A — Lubricant analysis showing both elevated wear metals AND moisture content requires draining the contaminated fluid, inspecting for both wear sources (failed bearings, gear damage) and water entry sources (failed seals, damaged vent), and refilling with proper fluid. Both contamination sources must be identified and corrected to prevent recurrence; addressing only one source allows the other to continue causing damage.

34. C — A wheel seal that has progressed to visible drip is allowing oil onto brake friction surfaces, which requires complete brake friction component replacement. Oil contamination cannot be cleaned from brake friction material because oil penetrates the porous surface and bleeds back out under heat. Returning the truck to service without correction allows progressive contamination and eventual brake failure.

35. D — Drive axle noise that varies between drive and coast conditions requires inspection of drive-side and coast-side ring and pinion tooth flanks and verification of backlash. Drive-side wear produces drive-condition noise; coast-side wear produces coast-condition noise. The specific pattern of drive-vs-coast variation guides the inspection focus to identify the specific worn flank.

36. A — ECT sensor errors do not affect IAD output shaft seal condition. The other choices all describe direct causes of seal leakage: worn seal at end of service life, excessive bearing wear allowing shaft movement that damages the seal, and damaged sealing surface preventing proper seal contact. ECT is unrelated to drive axle seal components.

37. B — IAD lock engagement on the highway during rain causes drivetrain windup, tire scuffing, and possible component damage. The IAD lock forces both axles to rotate at exactly the same speed regardless of slight differences; on dry-road portions of the trip (likely some portion of any rain-affected drive), this produces severe drivetrain stress. The truck requires immediate inspection to assess any damage from the misuse.

38. C — Ring gear runout exceeding service specification requires investigation of the cause (carrier damage, improper installation, ring gear damage) and correction. Excessive runout causes improper tooth contact, accelerated wear, and progressive damage. Continuing operation allows the damage to progress; identifying the cause guides the proper repair approach (carrier service, reinstallation, or component replacement).

39. D — Clunking noise only during throttle transitions indicates excessive backlash between ring and pinion allowing tooth separation under no load and re-contact when torque is applied. The clunk is the teeth slamming together as load direction reverses. Proper backlash holds the teeth in close mesh through transitions without separation. Other causes produce different noise patterns.

40. B — Complete bearing replacement requires resetting all preload, depth, and backlash specifications during reassembly. The new bearings have different dimensions that affect ring gear position and pinion depth, requiring complete setup verification. Reusing existing shims or skipping setup produces improper mesh and accelerated wear; targeted replacement without setup verification fails to ensure proper drivetrain function.