PRACTICE EXAM 8: T3 SIMULATION (40 QUESTIONS)

DOMAIN A — CLUTCH (Questions 1–11)

1. A heavy-duty truck arrives with a complaint of harsh shifting on a manual transmission. Investigation reveals the clutch is releasing only 70% of its travel during pedal application. The most likely consequence if the truck is returned to service without correction is:

A. Loss of all forward gears requiring complete transmission replacement

B. Improved shift quality from reduced clutch travel during operation

C. Engine ECM derate condition activated by the clutch position sensor

D. Accelerated synchronizer-equivalent component wear and progressive transmission damage

2. The most likely cause of a heavy-duty clutch that releases properly with engine cold but fails to release as the engine reaches operating temperature is:

A. Worn clutch disc friction surfaces below minimum thickness specification

B. Air trapped in the hydraulic system that expands with thermal increase

C. Failed pilot bearing producing resistance during clutch engagement events

D. Damaged or weakened pressure plate spring affecting clamping evenly

3. A high-mileage Class 8 tractor (650,000 miles) shows a clutch that operates normally during all engagement events but produces a distinct noise during pedal release. The most likely cause is:

A. Worn clutch facings reducing clamping force during engagement events

B. Failed clutch master cylinder primary seal allowing internal leakage

C. Worn release bearing showing typical wear from extended service in fleet

D. Worn clutch fork pivot points producing noise during normal operation

4. The proper torque application method for heavy-duty clutch pressure plate to flywheel bolts on a single-disc design is:

A. Multiple passes in a star pattern, building from initial torque to final specification

B. Single pass at maximum specification torque without pattern requirement

C. Random sequence with calibrated torque wrench at final specification

D. Outer perimeter first, then working inward toward center bolts during installation

5. Technician A says heavy-duty truck clutches typically have a service life of 100,000 to 200,000 miles in fleet operation. Technician B says heavy-duty truck clutches typically have a service life of 500,000 to 750,000 miles in fleet operation. Who is correct?

A. Both Technician A and Technician B

B. Technician A only

C. Technician B only

D. Neither Technician A nor Technician B

6. The proper diagnostic priority when a heavy-duty truck shows a complaint of clutch slip during heavy load operation is to:

A. Replace the clutch assembly as preventive maintenance during the same visit

B. Apply battery voltage to the clutch components for diagnostic verification

C. Listen with a stethoscope at the clutch housing during light operation only

D. Verify pedal free play, internal adjustment, and disc condition systematically

7. The LEAST likely consequence of operating a heavy-duty clutch with continuous oil contamination from a failed rear engine seal is:

A. Glazed friction surfaces from oil cooking onto the disc material

B. Sudden loss of all forward gears requiring transmission replacement immediately

C. Chatter during initial engagement from inconsistent friction coefficient distribution

D. Progressive slip under load that worsens with continued operation period

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

A. Sets the position of the pressure plate fingers relative to the release bearing

B. Controls the external pedal free play during normal operating conditions

C. Determines the clutch brake engagement timing during pedal application

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

9. A heavy-duty truck arrives with a complaint that the clutch operates normally for the first hour of operation, then begins to slip during heavy load operations. The most likely cause is:

A. Worn clutch disc friction surfaces affecting all engagement events equally

B. Air introduced into the hydraulic system during recent service procedures

C. Failed pilot bearing producing resistance during clutch engagement events

D. Glazed friction surfaces combined with thermal expansion reducing clamping evenly

10. The proper procedure when a customer reports a clutch complaint that occurred during a previous trip but cannot be reproduced during shop testing is to:

A. Replace the clutch assembly as preventive maintenance based on complaint history

B. Refuse the repair since the symptom cannot be verified during the shop visit

C. Document conditions when complaint occurred, perform extended road test, and inspect components

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

11. The most likely cause of a heavy-duty clutch that develops sudden release problems immediately after fluid system service is:

A. Air introduced into the hydraulic system during the recent service procedures

B. Defective replacement components from a bad parts batch during installation

C. Improper bench bleeding before installation causing system contamination

D. Wrong clutch fluid type used during the recent service procedure

DOMAIN B — TRANSMISSION (Questions 12–24)

12. A heavy-duty AMT shows a fault code referencing the input shaft speed sensor along with reports of slipping engagement during launch. The most likely common root cause is:

A. Worn synchronizer rings allowing partial engagement during launch only

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

C. Worn or contaminated clutch facings affecting both engagement and sensor input

D. TCM software calibration issues affecting only sensor data processing

13. The proper procedure when a heavy-duty manual transmission shows external lubricant leakage at multiple locations is to:

A. Add additional lubricant to compensate for the leakage during operation

B. Apply silicone sealer to all leak locations during the same service visit

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

D. Identify each leak source individually and repair all locations during service

14. The most likely cause of a heavy-duty AMT that "hunts" between two gears during steady highway operation is:

A. Worn synchronizer rings allowing partial engagement during steady operation

B. Engine and TCM communication problem affecting shift logic decision processing

C. Insufficient air supply pressure preventing complete shift engagement during operation

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

15. The proper service action when a heavy-duty manual transmission produces a distinct grinding noise only when shifting from fifth to sixth gear is to:

A. Verify clutch release is complete and inspect specific gear engagement components

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

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

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

16. The LEAST likely cause of a heavy-duty manual transmission that produces noise in all forward gears but is silent in reverse is:

A. Worn input shaft bearings affected by all forward gear engagement conditions

B. Worn countershaft bearings carrying load during all forward operation conditions

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

D. Worn main shaft bearings affected by forward power flow conditions

17. The most accurate description of an Eaton Fuller 13-speed transmission shift sequence is:

A. Five sequential gears in low range, eight gears (5 standard + 3 splitter) in high range

B. Five sequential gears in low range, five gears with splitter activation in high range

C. Eight sequential gears in low range, five gears in high range during operation

D. Five sequential gears in low range, eight sequential gears (no splitter) in high range

18. The proper diagnostic approach for a heavy-duty AMT clutch actuator that operates intermittently is to:

A. Replace the actuator immediately as the most likely failure component

B. Verify air supply pressure, inspect actuator wiring, and test commanded operation

C. Apply battery voltage directly to the actuator for diagnostic verification

D. Replace the entire transmission as preventive maintenance during the same visit

19. A heavy-duty manual transmission produces a whining noise that is loudest in fourth gear and barely audible in other gears. The most likely cause is:

A. Damaged fourth gear set teeth showing wear or damage during inspection

B. Insufficient transmission lubricant level affecting all operations equally

C. Worn input shaft bearings carrying load in all forward gear conditions

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

20. The most likely consequence of operating a heavy-duty AMT with worn shift fork pads beyond service specification is:

A. Improved shift quality from reduced fork engagement during normal operation

B. Loss of engine power requiring complete engine ECM replacement during service

C. External lubricant leakage requiring transmission case repair during service

D. Hard shifting, jumping out of gear, and progressive engagement component damage

21. The proper procedure for verifying heavy-duty manual transmission lubricant condition during routine PM service is to:

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

B. Listen for lubricant flow with a stethoscope at idle conditions during operation

C. Drain a sample, inspect for color, contamination, and metallic particles

D. Replace the lubricant regardless of condition during every PM service interval

22. The LEAST likely cause of a heavy-duty manual transmission that grinds when shifting from neutral into reverse with the truck stopped is:

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

B. Clutch brake worn beyond service specification limits during operation

C. Clutch failing to fully release allowing input shaft rotation during shift

D. Clutch brake out of adjustment preventing proper input shaft stop function

23. The most accurate description of heavy-duty AMT clutch actuator stroke verification is:

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

B. Use scan tool to monitor commanded vs. actual actuator position values

C. Listen for actuator operation with a stethoscope during normal operation

D. Replace the actuator as preventive maintenance regardless of condition

24. The proper service action when a heavy-duty manual transmission shows lubricant analysis with elevated copper levels and normal iron levels is to:

A. Replace the transmission immediately as preventive maintenance during service

B. Continue operation since elevated copper has minimal effect during operation

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

D. Investigate bushing or shift fork pad wear and address the underlying cause

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

25. A heavy-duty truck with a two-piece driveshaft develops vibration that occurs only during acceleration but disappears during coast and steady-state operation. The most likely cause is:

A. Driveshaft tube damage from external impact during recent operation

B. Center support bearing failure with broken rubber isolation mount

C. Driveline angle change under torque from suspension geometry shift during loading

D. U-joint cap rotation visible during physical inspection of the components

26. The proper procedure when a heavy-duty driveshaft U-joint shows seizure during inspection is to:

A. Replace the U-joint and inspect the yoke ears for damage from the seized condition

B. Apply lubricant to the U-joint to free the seized condition during the service

C. Continue operation since some seizure is normal during high-mileage operation

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

27. The most accurate description of heavy-duty driveshaft balancing service 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 driveshaft components during service

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

28. A heavy-duty truck with a two-piece driveshaft shows excessive driveshaft movement during inspection at the center support bearing. The most likely cause is:

A. Excessive operating angles forcing the support bearing into binding contact

B. Failed rubber isolation mount allowing the bearing to move beyond design tolerance

C. Insufficient grease in the support bearing requiring lubrication during service

D. Manufacturing defect in the original mount during the production process

29. Technician A says heavy-duty driveshaft slip joint splines must be lubricated at manufacturer-specified intervals. Technician B says heavy-duty driveshaft slip joint splines are sealed for service life and require no lubrication. Who is correct?

A. Technician A only

B. Both Technician A and Technician B

C. Technician B only

D. Neither Technician A nor Technician B

30. The LEAST likely cause of a heavy-duty driveshaft that develops vibration only at specific RPM ranges in highway operation is:

A. Resonance condition from minor imbalance or U-joint wear during operation

B. Driveline angle problems amplified at specific operating speed ranges only

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

D. Driveshaft natural frequency matching specific operating frequency conditions

31. The proper procedure when a heavy-duty driveshaft is removed for service is to:

A. Disconnect the front yoke first without marking any reference positions

B. Mark the orientation, support the assembly properly, remove fasteners systematically

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

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

DOMAIN D — DRIVE AXLE (Questions 32–40)

32. A heavy-duty tandem drive axle shows a complaint of "growling noise during cornering" that varies between left and right turns. The most likely cause is:

A. Pinion preload set too tightly at the last service event during recent operation

B. Insufficient drive axle gear oil level affecting overall operation conditions

C. Excessive ring and pinion backlash affecting all operating conditions equally

D. Differential side gear or wheel bearing wear on the side loaded during cornering

33. The proper service action when a heavy-duty drive axle wheel seal shows a small puddle of gear oil under the wheel hub area is to:

A. Schedule complete service including seal replacement and brake inspection

B. Continue operation since minor leakage has minimal effect during operation

C. Apply silicone sealer to the seal area to stop the leakage during service

D. Apply battery voltage to the seal area for diagnostic testing during service

34. The most likely cause of a heavy-duty drive axle that produces a humming noise during all operating conditions but worsens under heavy acceleration is:

A. Insufficient gear oil level affecting all operating conditions equally

B. Differential side gear wear affecting torque transmission during operations

C. Drive-side ring and pinion gear flank wear loaded during acceleration only

D. Wheel bearing wear affected by all operating conditions equally

35. The proper diagnostic priority when a heavy-duty drive axle complaint of "noise during throttle-off coast" is presented is to:

A. Replace the drive axle assembly as preventive maintenance during service

B. Inspect coast-side ring and pinion gear flanks and verify backlash specifications

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

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

36. The LEAST likely cause of a heavy-duty drive axle that develops accelerated wheel bearing wear is:

A. Improper torque application during recent wheel bearing service procedures

B. Contamination from failed wheel seal allowing dirt entry during operation

C. Excessive endplay or insufficient preload at the most recent service event

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

37. The most accurate description of TMC RP 618 wheel bearing torque procedure is:

A. Tighten while rotating the wheel, back off, then retighten to specification

B. Apply maximum torque during installation without rotation requirement

C. Estimate torque visually based on bolt size during installation procedures

D. Apply anti-seize compound and use minimum specification during service

38. The proper procedure when a heavy-duty drive axle shows ring gear tooth contact pattern shifted toward the toe after recent pinion bearing service is to:

A. Increase carrier preload using thicker carrier shims during the service

B. Decrease carrier preload using thinner carrier shims during the service

C. Increase pinion depth using thicker shims behind the pinion bearing race

D. Decrease pinion depth using thinner shims behind the pinion bearing race

39. The proper diagnostic approach for a heavy-duty tandem drive axle with a complaint of "noise that varies between forward-rear and rear-rear positions" is to:

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

B. Isolate the noise source through systematic component testing on each unit

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

D. Listen with a stethoscope without any disassembly of the affected unit

40. The proper service action when a heavy-duty drive axle inter-axle differential shows lubricant contamination during analysis is to:

A. Continue operation since lubricant contamination has minimal effect on operation

B. Drain the contaminated fluid, inspect for the contamination source, and refill with proper fluid

C. Replace the entire tandem drive axle assembly during the same service event

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

ANSWER KEY AND EXPLANATIONS

DOMAIN A — CLUTCH

1. D — A clutch releasing only 70% of travel produces incomplete disengagement, allowing residual rotation of the input shaft during shifts. In a heavy-duty manual transmission (which is non-synchronized), this causes accelerated wear on engagement components and progressive transmission damage. The clutch problem manifests as a transmission complaint, masking the root cause until significant damage occurs.

2. B — Air trapped in the hydraulic system expands more than fluid as temperature rises, increasing system pressure and disrupting hydraulic transmission of pedal force. Cold operation may be acceptable when air remains compressed; hot operation reveals the problem as expanded air prevents complete release. This is a classic temperature-sensitive symptom signature of air contamination.

3. C — Worn release bearing on a 650,000-mile clutch is consistent with normal wear from extended fleet service. The release bearing operates every clutch application; over hundreds of thousands of miles, internal wear progresses to noise. The pattern of noise during pedal release (when the bearing loads the pressure plate fingers) confirms release bearing as the source rather than facing or master cylinder issues.

4. A — Pressure plate to flywheel bolt installation uses multiple passes in a star pattern, building from initial torque (typically 25–30 ft-lbs) to final specification across multiple passes. This sequence ensures even clamping force across the assembly without distortion. Single-pass maximum torque or random sequences cause uneven clamping that compromises clutch function.

5. C — Heavy-duty truck clutches typically have a service life of 500,000 to 750,000 miles in fleet operation. The high clamping force, large diameter, and twin-disc designs of heavy-duty applications provide extended service life compared to medium-duty or passenger car clutches. Technician A's 100,000–200,000 mile range is more typical of medium-duty or improperly maintained applications.

6. D — Clutch slip diagnosis under heavy load requires systematic verification of pedal free play (which affects release bearing retraction), internal adjustment (which affects clamping force), and disc condition (which affects friction coefficient). Each parameter must be verified to identify the specific cause; blanket replacement wastes labor and parts.

7. B — Sudden complete loss of forward gears is not a typical consequence of oil contamination. The other choices all describe direct effects: glazing from oil cooking onto the disc, chatter from

inconsistent friction, and progressive slip under load. Oil contamination produces gradual deterioration, not sudden total failure of the transmission.

8. A — Internal adjustment positions the pressure plate fingers relative to the release bearing, controlling whether the clutch engages fully when the pedal is released. Proper adjustment maintains correct clamping force as facings wear; out-of-spec adjustment causes slip or incomplete release. External free play is a separate adjustment at the master cylinder pushrod.

9. D — Slip that develops only after sustained operation typically indicates glazed friction surfaces combined with thermal expansion that reduces clamping force during heat soak. The clutch operates normally when cold because clamping is adequate; as components heat and expand, the glazed surfaces lose grip and slip develops. The temperature-related onset distinguishes this from constant slip causes.

10. C — Customer complaints that cannot be reproduced require documentation of conditions when the symptom occurred, extended road test under those conditions, and component inspection. Some symptoms appear only under specific load, temperature, or terrain conditions that cannot be replicated in shop testing. Systematic investigation identifies actual causes that quick replacement would miss.

11. A — Sudden release problems immediately after fluid system service typically indicate air introduced during the service procedure. Any time the hydraulic system is opened, air enters the lines and must be properly bled to restore solid hydraulic transmission of pedal force. Improper bleeding produces a spongy pedal and incomplete release that appears immediately after service.

DOMAIN B — TRANSMISSION

12. C — Worn or contaminated clutch facings affect both engagement (causing slip during launch) and input shaft speed sensor data (because the slipping clutch produces inconsistent input shaft rotation that doesn't match expected values). The TCM may set the sensor fault when calculated and measured values diverge consistently. The clutch is the common root cause behind both symptoms.

13. D — Multiple lubricant leaks require individual identification and repair of each source during service. Adding more lubricant or applying sealer doesn't address root causes; leaks progress and cause continuing problems. Each leak source must be diagnosed and repaired separately to fully restore the transmission to proper service condition.

14. B — AMT "hunting" between two gears during steady operation indicates engine and TCM communication problems affecting shift logic decision processing. The TCM cannot determine whether to shift up or stay in the current gear due to inconsistent or missing data from the engine ECM via J1939. Synchronizer wear and ECT sensor errors produce different symptoms.

15. A — Grinding only between specific gears requires verification of complete clutch release first, then inspection of the specific gear engagement components. The clutch may not be fully releasing

only during certain shift transitions, or specific gear teeth or shift fork components may be worn. Targeted diagnosis identifies the actual cause without unnecessary replacement.

16. C — ECT sensor errors affect engine fuel mixture but do not produce transmission noise. The other choices all describe direct sources of forward-gear noise: input shaft, countershaft, and main shaft bearings carry load during forward operation. Reverse uses different power flow paths through different bearings, which would explain the silent reverse if the noisy bearings are not in the reverse flow path.

17. D — The Eaton Fuller 13-speed transmission uses five sequential gears in low range (no splitter) and eight sequential gears in high range (no splitter — the standard 5-speed with high range plus 3 additional gears via the splitter activated only in high range). This produces 13 forward gears total: 5 low range + 8 high range with splitter steps.

18. B — Intermittent AMT clutch actuator operation requires verification of air supply pressure, inspection of actuator wiring, and testing of commanded operation. Intermittent symptoms typically have one of these three causes (pressure, electrical, or actuator). Systematic verification identifies the actual fault before parts replacement.

19. A — Whining noise loudest in fourth gear specifically and barely audible in other gears indicates damaged fourth gear set teeth showing wear or damage. The noise is gear-specific because only fourth gear engagement places the damaged teeth into the power flow. Other gears use different gear sets that remain undamaged. Bearing problems typically affect multiple gears.

20. D — Worn shift fork pads beyond specification produce hard shifting (forks cannot move sliding clutches cleanly), jumping out of gear (worn pads allow disengagement under load), and progressive engagement component damage as the worn pads continue to operate. Each symptom worsens with continued operation until major repair is required.

21. C — Lubricant condition verification requires draining a sample, inspecting for color (darkening indicates oxidation), contamination (water emulsion or fuel dilution), and metallic particles (indicating internal wear). The visual and tactile inspection of a fluid sample provides immediate diagnostic information about transmission internal condition without disassembly.

22. A — ECT sensor errors affect engine fuel mixture but do not cause grinding during reverse engagement from a stop. The other choices all describe direct causes of reverse engagement grinding through clutch brake or clutch release problems. ECT is unrelated to the clutch system that controls input shaft rotation during stopped shifts.

23. B — AMT clutch actuator stroke verification uses scan tool monitoring of commanded vs. actual actuator position values. The scan tool displays both values, allowing the technician to verify whether the actuator is responding correctly to control commands. Voltage application and replacement do not verify functional operation; stethoscope listening cannot quantify position accuracy.

24. D — Elevated copper with normal iron indicates bushing or shift fork pad wear (bronze/brass components) without significant gear or shaft wear (iron components). The proper response is to investigate the specific source and address it during service. Continuing operation allows progression; preventive transmission replacement is excessive when targeted repair will resolve the issue.

DOMAIN C — DRIVESHAFT AND U-JOINTS

25. C — Driveshaft vibration only during acceleration indicates a driveline angle change under torque from suspension geometry shift during loading. As torque is applied, suspension geometry shifts slightly under axle wind-up, changing U-joint operating angles. This produces acceleration-only vibration that resolves on coast when torque is released. Other causes produce vibration across multiple operating conditions.

26. A — A seized U-joint requires replacement plus inspection of the yoke ears for damage caused by the seized condition. A seized joint exerts forces on the yoke ears that may produce damage requiring yoke or driveshaft replacement. Lubricating a seized joint cannot restore proper operation; the internal damage is permanent.

27. D — Driveshaft balance is performed when vibration symptoms appear, using either a balance machine (precision shop service) or wheel-weight method (field service). Balance is not required after every U-joint replacement on most applications, as factory balance typically remains within tolerance. Annual balance checks are not standard practice; collision damage isn't the only cause of imbalance.

28. B — Excessive driveshaft movement at the center support bearing typically indicates a failed rubber isolation mount allowing the bearing to move beyond design tolerance. The rubber mount fatigues with age and temperature cycling, eventually failing and allowing the bearing to oscillate. Insufficient grease causes different symptoms; operating angles affect U-joints, not the support mount directly.

29. A — Heavy-duty driveshaft slip joint splines must be lubricated at manufacturer-specified intervals. The greaseable design is standard on heavy-duty trucks because the high loads and operating conditions require periodic lubrication. Sealed-for-life designs exist on some applications but are not universal; service information specifies the requirements for each application.

30. C — ECT sensor errors affect engine fuel mixture but do not produce driveshaft vibration at specific RPM ranges. The other choices all describe direct causes of RPM-specific vibration: resonance amplifies imbalance, driveline angle problems vary with operating speed, and natural frequency matching produces resonant vibration. The phenomenon is mechanical and unrelated to ECT.

31. B — Driveshaft removal procedure includes marking the orientation (front and rear yoke positions) for reinstallation in the same configuration, supporting the assembly properly to prevent damage during removal, and removing fasteners systematically. Marking ensures the driveshaft returns to the same balanced position; support prevents component damage.

DOMAIN D — DRIVE AXLE

32. D — Cornering-related drive axle noise that varies between left and right turns indicates differential side gear or wheel bearing wear on the side loaded during cornering. Cornering shifts load to the inside or outside wheel during the turn, exposing wear on the loaded components. The asymmetric symptom (different noise in left vs. right turns) confirms that the wear is on one specific side rather than a general condition.

33. A — A small puddle of gear oil under the wheel hub indicates seal failure progression beyond minor weeping. Service includes seal replacement and brake inspection because oil may have already reached the brake friction surfaces, requiring complete brake friction component replacement if contamination has occurred. Continued operation allows further contamination progression.

34. C — A humming noise loudest under heavy acceleration indicates drive-side ring and pinion gear flank wear. Each gear tooth has two flanks: drive-side (loaded during acceleration) and coast-side (loaded during deceleration). Drive-side wear produces noise that worsens under acceleration loading. Other causes produce different load-relationship patterns.

35. B — Drive axle "noise during throttle-off coast" requires inspection of coast-side ring and pinion gear flanks and verification of backlash specifications. Coast-side wear produces noise that appears during deceleration when the coast flanks carry load. Backlash specification verification ensures proper tooth contact during the coast condition.

36. D — ECT sensor errors affect engine fuel mixture but do not affect wheel bearing wear. The other choices all describe direct causes of accelerated bearing wear: improper torque produces incorrect preload, contamination causes abrasive wear, and incorrect endplay or preload damages bearing surfaces during operation. ECT is unrelated to wheel bearing operation.

37. A — TMC RP 618 wheel bearing torque procedure requires tightening while rotating the wheel (to seat the bearings), backing off the adjusting nut, then retightening to specification. The rotation during initial torque ensures even bearing seating; the back-off prevents over-tightening; the final torque establishes proper preload or endplay per the recommended practice.

38. C — Toe-side tooth contact pattern shift after pinion bearing service indicates insufficient pinion depth, requiring thicker shims behind the pinion bearing race to move the pinion deeper into mesh. The thicker shims correct the depth, shifting the contact pattern back toward the center of the tooth face. Carrier preload affects backlash, not the contact pattern direction across the tooth face.

39. B — Tandem drive axle noise that varies between positions requires systematic isolation through component testing on each unit. The differential housings, bearings, and gear sets in each axle can produce noise; identifying which axle is the source requires isolation testing rather than blanket replacement or visual inspection alone. Targeted diagnosis prevents unnecessary repair scope.

40. B — IAD lubricant contamination requires draining the contaminated fluid, inspecting for the contamination source (failed seal, water entry, or component wear), and refilling with proper fluid. Continued operation allows progressive damage from contamination; complete fluid replacement and source identification prevents recurrence. Tandem replacement is excessive when targeted repair resolves the issue.