

# PRACTICE EXAM 17: ASE A2 SIMULATION

## (50 QUESTIONS)

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1. A vehicle equipped with a six-speed automatic transmission has been in the shop three times in two months for the same complaint: a brief 1-second shudder during the 3-4 upshift at moderate throttle. Two previous shops replaced the transmission fluid and the valve body without resolving the symptom. The current technician reviews the repair history and notes that neither shop tested or replaced the torque converter. What diagnostic principle does this repair history illustrate?

- A. The valve body replacement should have corrected any shift quality issue, confirming the problem is now in the replacement valve body
- B. The fluid exchange should have resolved any friction-related shudder, confirming the issue is electronic and requires module reprogramming
- C. When common repairs fail to resolve a symptom, the technician must investigate less-common causes — including the converter — before repeating previous repairs
- D. Repeated repairs without resolution prove the customer's perception is incorrect and the shudder is a normal characteristic of this transmission

2. A customer reports that the automatic transmission "feels sluggish" during acceleration but shifts at the correct RPM and the fluid level is normal. The technician performs a stall test: Drive stall = 1,700 RPM, Reverse stall = 1,700 RPM. The manufacturer's specification is 2,200 RPM. Both stall speeds are equally low. What does the equally low stall speed in BOTH ranges tell the technician?

- A. Both the forward and reverse clutch packs are slipping equally, which would be an unlikely coincidence if the cause were internal transmission wear
- B. The engine is not producing its rated power — since the transmission holds in both ranges, the low stall speed is an engine performance problem
- C. The torque converter stator is seized, preventing torque multiplication equally in both Drive and Reverse conditions
- D. The oil pump is providing adequate pressure to hold the clutches but cannot overcome the engine's reduced torque output at stall

3. A vehicle's automatic transmission has been driven 15,000 miles since a complete overhaul. The customer reports a new symptom: a faint metallic ticking noise proportional to vehicle speed that is present in all forward gears and Neutral but disappears in Park. There are no DTCs and shift quality is normal. What does the "present in Neutral, absent in Park" characteristic tell the technician about the noise source?

A. The noise is from the torque converter because it continues spinning in Neutral but stops when the parking pawl locks the output shaft in Park

B. The noise is from the engine because Park unloads the drivetrain and eliminates the torsional vibration that produces the ticking at the engine

C. The noise is from the valve body because the manual valve position change from Neutral to Park redirects fluid and quiets the hydraulic pulsation

D. The noise is from the output shaft or a component downstream that rotates with vehicle speed — it stops in Park because the parking pawl locks the output shaft

4. Technician A says that when a vehicle is towed with the drive wheels on the ground and the engine off, the transmission oil pump does not operate and internal components receive no lubrication. Technician B says that some transmissions with rear-mounted pumps can be towed with the drive wheels on the ground because the rotating output shaft drives the auxiliary pump. 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

5. A vehicle with a rear-wheel-drive automatic transmission produces a single, sharp "pop" from the drivetrain at the exact moment of every 2-3 upshift. The pop is present at all throttle levels and has been consistent for 5,000 miles without worsening. No other shifts produce any noise. The driveshaft, U-joints, and differential have been inspected and found in good condition. What is the MOST LIKELY cause?

- A. A cracked flexplate that resonates at the specific torsional frequency produced during the 2-3 shift RPM change event
- B. A worn 2nd gear band anchor that allows the band to shift position momentarily during the 2-3 release, producing a metallic pop
- C. A loose torque converter bolt that shifts rotational position during the torque change of the 2-3 shift and produces a single impact
- D. Excessive internal transmission endplay that allows the gear train to shift axially during the 2-3 shift's specific thrust load change

6. A vehicle equipped with a four-speed automatic transmission starts in 2nd gear in Drive instead of 1st. Reverse works normally. When the driver manually selects 1st gear, the transmission engages 1st and operates normally with engine braking. Upon returning to Drive, the transmission again starts in 2nd. There are no DTCs. The technician checks the scan tool and confirms that the module is commanding 1st gear at the initial Drive engagement. What does the module commanding 1st but the transmission starting in 2nd indicate?

- A. The transmission range sensor is misreporting the selected range, causing the module to command a gear different from what it displays
- B. The 1st gear holding device is not applying despite the module's command — the solenoid, valve, or holding device circuit has a mechanical fault
- C. The module's software has been corrupted and is commanding 1st gear on the data stream but sending a 2nd gear solenoid pattern on the output
- D. The vehicle speed sensor is reporting a false minimum speed that triggers a safety interlock preventing 1st gear engagement in automatic Drive

7. A customer reports that the vehicle's automatic transmission produces a "groaning" noise during the first 30 seconds of operation every morning. The groan is present in Park at idle and fades as the engine warms up. The technician listens with a stethoscope and localizes the noise to the pump area of the bell housing. The fluid level is correct. What is the MOST LIKELY cause?

- A. The oil pump cavitating as it draws cold, viscous fluid through the filter and passages during the initial 30 seconds before the fluid thins

B. A worn torque converter bearing that produces noise when dry after overnight sitting and quiets once lubricating fluid film develops

C. A failing alternator bearing whose noise is transmitted through the engine block to the bell housing and sounds like a pump groan

D. A loose pump housing bolt that resonates at idle frequency when cold but tightens as the aluminum pump housing expands with heat

8. A technician road-tests a vehicle and observes the following: the transmission shifts normally through all gears, but during every downshift from 4th to 3rd, there is a brief 0.5-second hesitation where the engine RPM rises approximately 300 RPM before 3rd gear engages. Upshifts from 3rd to 4th are smooth. All other downshifts are smooth. What is the MOST LIKELY cause?

A. The 4th gear clutch is slow to release during the 4-3 downshift, causing a momentary tie-up before 3rd gear can apply

B. The engine torque management system is reducing torque too aggressively during the 4-3 transition, creating a momentary power gap

C. The 3-4 shift valve is sticking in the 4th gear position, delaying the release of the 4th gear fluid path during the downshift command

D. The 3rd gear clutch apply circuit is slow to build pressure during the 4-3 downshift, allowing the engine to flare before engagement

9. A vehicle's automatic transmission produces a vibration that the customer describes as a "shimmy" during the exact moment of TCC engagement at 45 mph. Once the TCC is fully locked, the shimmy disappears and highway cruising is smooth. A fluid service with the manufacturer's specified fluid was performed 2,000 miles ago. The shimmy persists. What should the technician recommend NEXT?

A. A second fluid exchange to further dilute remaining old fluid that may still contain degraded friction modifiers in the converter

B. A control module reflash to update the TCC engagement strategy to apply the converter clutch more aggressively at 45 mph

C. Torque converter replacement, since persistent TCC shudder after a correct fluid service indicates worn friction material inside the converter

D. An engine mount inspection since the vibration at TCC lockup may be engine torsional vibration transmitted through the now-rigid drivetrain

10. Technician A says that a planetary gear set in which the ring gear is held, the sun gear is input, and the carrier is output produces a forward gear reduction. Technician B says that a planetary gear set in which the carrier is held, the sun gear is input, and the ring gear is output produces reverse rotation. 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

11. A vehicle with an automatic transmission has been diagnosed with a worn 3rd gear direct clutch based on consistent slippage in 3rd gear with no other gear affected. The technician is preparing the repair estimate. The customer asks: "Can you just fix 3rd gear without doing a complete overhaul?" What is the BEST response?

A. Yes — the worn direct clutch pack can be replaced individually without disturbing other internal components if the rest of the transmission is in good condition

B. No — industry best practice is to perform a complete overhaul whenever the transmission is opened because all internal components have the same mileage and wear

C. Yes — but only if the transmission has fewer than 80,000 miles, because higher-mileage units require a full overhaul for warranty coverage

D. No — the direct clutch cannot be accessed without removing the entire gear train, which requires replacing all components once disturbed

12. A vehicle stores DTC P0776 — Pressure Control Solenoid B Performance/Stuck Off. The transmission produces harsh 3-4 and 4-5 upshifts. The technician tests PCS-B at the case connector: resistance = 5.2 ohms (specification: 4-7 ohms). The technician then commands PCS-B through a bidirectional test at 50% duty cycle. The scan tool shows the command active, but the technician simultaneously measures the actual current at the solenoid connector — it reads only 0.3 amps instead of the expected 0.9 amps. What does the low actual current indicate?

- A. The solenoid coil resistance is at the high end of specification and is limiting current flow below the functional threshold at 50% duty cycle
- B. The scan tool's bidirectional command is not reaching the solenoid because the module is blocking the command due to the stored DTC
- C. The solenoid plunger is mechanically stuck and is creating back-EMF that reduces the effective current flowing through the coil circuit
- D. A high-resistance fault exists between the TCM's driver output and the solenoid connector that drops voltage and limits current delivery

13. A technician monitors scan tool data on a vehicle cruising at 65 mph in 6th gear with TCC ON. Engine RPM = 1,900, Input Shaft Speed = 1,900, Output Shaft Speed = 1,350. The technician calculates the gear ratio:  $1,900 \div 1,350 = 1.41:1$ . The manufacturer specifies 6th gear as 0.67:1 overdrive. What is the MOST LIKELY explanation?

- A. The transmission is not in 6th gear — the actual ratio of 1.41:1 corresponds to a lower gear, likely 3rd, despite the module commanding 6th
- B. The TCC is slipping so severely that it distorts the ratio calculation by inflating the input speed relative to the output speed
- C. The output speed sensor is reading approximately half of the actual speed, doubling the ratio calculation from the true 0.67:1 to 1.41:1
- D. The input speed sensor has failed and is defaulting to engine RPM, while the output speed sensor reads correctly, producing an incorrect ratio

14. A vehicle equipped with a ten-speed automatic transmission has the following symptom: all shifts are smooth and correctly timed during normal driving. However, when the driver manually requests a

10-9 downshift using the paddle shifters at 70 mph, the downshift does not occur — the transmission remains in 10th gear. All other manual downshift requests at any speed are executed immediately. What is the MOST LIKELY cause?

- A. The paddle shifter module has a faulty contact at the downshift position that intermittently fails to send the command at highway speed vibration
- B. The 9th gear clutch has worn friction material that prevents the module from commanding the 10-9 downshift at the high torque of 70 mph
- C. The shift solenoid controlling the 10-9 transition is sticking at the specific duty cycle required for this shift, preventing valve movement
- D. The module's downshift protection logic is preventing the 10-9 downshift at 70 mph because the resulting engine RPM would exceed the safe limit

15. A vehicle has DTC P0720 — Output Speed Sensor Circuit — that sets intermittently during highway driving. The sensor resistance and wiring test within specification. The technician monitors the output speed PID on the scan tool during an extended highway drive. The PID reads correctly for 15 minutes, then drops to 0 RPM for 0.5 seconds, then returns to the correct reading. This dropout occurs three times during a 45-minute highway drive. What is the MOST LIKELY cause?

- A. A cracked reluctor ring that separates briefly at a specific position during thermal expansion, causing the signal gap at that rotation point
- B. An intermittent connection in the sensor circuit — a loose pin, corroded terminal, or marginal wire splice — that opens momentarily under vibration
- C. A failing output speed sensor with an internal intermittent open in the coil winding that disconnects at specific operating temperatures
- D. A control module input circuit fault that drops the sensor data for 0.5 seconds during peak processing load before recovering

16. A technician reviews scan tool data and finds the following adaptive learning values on a vehicle with 110,000 miles: all clutch apply pressure adaptations are at moderate positive values (+12% to +18%), but the TCC apply pressure adaptation is at +38% — significantly higher than the clutch adaptations. What does the elevated TCC adaptation specifically indicate?

- A. The TCC solenoid has developed increased internal resistance that requires the module to command a higher duty cycle to achieve the same output
- B. The transmission fluid's friction modifier properties have degraded specifically at the TCC friction surface, requiring more pressure to achieve grip
- C. The TCC friction material has worn more than the clutch friction material and requires substantially more apply pressure to achieve acceptable lockup
- D. The TCC friction material has worn significantly, and the module has progressively increased the TCC apply pressure to compensate for the reduced grip

17. A vehicle equipped with a CVT has the following customer complaint: during moderate acceleration from a stop, the vehicle accelerates smoothly until approximately 30 mph, at which point the CVT produces a distinct "thump" and the engine RPM changes abruptly. After the thump, acceleration continues normally. The scan tool shows the CVT ratio changes smoothly except at the thump point, where the ratio changes 0.3:1 instantly. What is the MOST LIKELY cause?

- A. The CVT pulleys are sticking at a specific ratio position and releasing abruptly, causing the sudden ratio change that produces the thump
- B. The CVT belt has a damaged section that causes it to slip and re-grip at the specific tension produced during 30 mph acceleration
- C. Normal CVT operation where the module intentionally commands a rapid ratio change at 30 mph to simulate a conventional shift event
- D. A faulty CVT fluid temperature sensor that causes the module to command a sudden ratio adjustment at the specific temperature reached at 30 mph

18. A vehicle has DTC P0868 — Transmission Fluid Pressure Low — stored as a current code. The scan tool shows the pressure control solenoid commanding 45% duty cycle, but the internal pressure sensor reads only 52 psi (specification for this condition: 80 psi). The technician connects a mechanical gauge to the external test port and reads 80 psi — matching specification. What does the discrepancy between the internal sensor and the mechanical gauge indicate?

- A. The mechanical gauge is inaccurate and the internal sensor is correct, meaning the pressure truly is low at the internal measurement point

B. The pressure control solenoid is producing correct main line pressure but a restriction between the main gallery and the sensor prevents full pressure from reaching it

C. The internal pressure sensor has failed and is reading lower than the actual pressure, triggering a false P0868 code based on incorrect sensor data

D. The pressure is correct at the external port but genuinely low at the internal sensor location due to a leak between the two measurement points

19. A technician is diagnosing a vehicle where the cruise control works normally on flat highways but disengages during moderate acceleration — such as passing another vehicle — even when the transmission does not shift. No DTCs are stored in any module. What is the MOST LIKELY cause?

A. A faulty throttle position sensor that produces a signal spike during rapid throttle opening that exceeds the cruise module's throttle rate tolerance

B. The TCC releasing during the acceleration event produces a brief speed change that exceeds the cruise control's speed deviation tolerance

C. The engine's variable valve timing system creates a momentary torque fluctuation during acceleration that the cruise module interprets as a fault

D. The adaptive cruise radar sensor detects the vehicle being passed as an obstacle and commands disengagement as a false collision avoidance response

20. A vehicle stores DTC U0073 — Control Module Communication Bus Off — in multiple modules simultaneously. The vehicle runs but the transmission is in limp mode. The scan tool can communicate with some modules but not others. What does a bus-wide communication fault affecting multiple modules indicate?

A. Multiple modules have simultaneously experienced internal processor failures from a voltage spike that damaged their CAN bus transceivers

B. The vehicle's main battery has a dead cell that produces insufficient voltage for the CAN bus network to maintain communication integrity

C. A software incompatibility between modules from different manufacturers is causing a network conflict that disables the bus periodically

D. A CAN bus hardware fault — such as a shorted or open bus wire, a failed termination resistor, or a damaged connector — is disrupting network communication

21. A vehicle equipped with a dual-clutch transmission (DCT) has the following scan tool data during a 2-3 upshift: Clutch 1 torque decreases from 180 Nm to 0 Nm over 0.3 seconds while Clutch 2 torque increases from 0 Nm to 180 Nm over the same 0.3 seconds. What does this simultaneous torque transfer pattern represent?

A. A DCT shift error where both clutches are momentarily fighting each other, creating a torque conflict during the overlap period

B. An abnormally slow clutch handoff that should complete in 0.1 seconds or less for a properly functioning DCT shift event

C. The fundamental DCT shift mechanism — torque is smoothly transferred from the odd-gear clutch to the even-gear clutch during every upshift

D. A dangerously aggressive shift strategy where the torque transfer occurs too quickly, risking drivetrain shock and clutch damage

22. A vehicle has DTC P0741 — TCC System Stuck Off — and DTC P0731 — Gear 1 Incorrect Ratio — stored simultaneously. The technician reviews the component application chart and finds that the TCC apply circuit and the 1st gear holding device are supplied by separate hydraulic passages with no shared components. Given that the circuits are independent, what is the MOST LIKELY single root cause?

A. Two completely separate simultaneous failures — a worn TCC surface and a worn 1st gear clutch — that coincidentally set codes at the same time

B. A control module software fault that is generating false codes for both circuits due to a corrupted shift table or monitoring routine

C. A system-wide pressure deficiency from a worn pump or stuck regulator that affects all circuits including both the TCC and 1st gear

D. A faulty input speed sensor that produces incorrect data for both the TCC slip calculation and the 1st gear ratio calculation simultaneously

23. A technician monitors scan tool data during a road test. At 55 mph in 5th gear with TCC ON, the TCC slip PID shows a steady -10 RPM. The technician then increases speed to 65 mph — the TCC slip changes to -15 RPM. At 75 mph, the slip reads -20 RPM. The negative slip value increases proportionally with speed. What does this speed-proportional negative slip pattern indicate?

A. The TCC is progressively losing grip as vehicle speed increases, and the negative value indicates the clutch is releasing in the opposite direction

B. The input speed sensor and engine RPM sensor have a calibration offset that increases proportionally with rotational speed

C. The torque converter's fluid dynamics create a forward-driving force on the turbine at high speed that pushes it slightly faster than the impeller

D. The engine RPM sensor reads slightly lower than the input speed sensor at all speeds, and the proportional increase reflects the normal scaling difference

24. A vehicle equipped with a stop/start system has the following complaint: the engine restarts normally at traffic lights, but the transmission produces a delayed engagement of approximately 2 seconds after each restart before the vehicle begins to move. The delay was not present when the vehicle was new. No DTCs are stored. What is the MOST LIKELY cause?

A. The auxiliary electric pump has worn internally and can no longer maintain adequate clutch holding pressure during the engine-off period

B. The stop/start battery has degraded and cannot power the auxiliary pump at its required output during the engine-off parking events

C. The main oil pump takes 2 seconds to rebuild system pressure after each restart because the fluid drains back during the engine-off period

D. The transmission control module takes 2 seconds to reinitialize its shift logic after each restart, delaying the engagement command

25. A technician is diagnosing a vehicle where the transmission produces a harsh engagement into Drive that occurs randomly — approximately once every fifteen engagements. All other engagements are smooth. The scan tool recording captures a harsh event and shows that during the harsh engagement, the

forward clutch pressure sensor reads 15 psi higher than during smooth engagements. What does this pressure spike during the harsh event indicate?

- A. The pressure control solenoid is producing a higher output than commanded, confirming an electrical fault in the solenoid circuit
- B. The module is deliberately commanding higher pressure during the harsh events based on a sensor input that intermittently triggers a different engagement strategy
- C. The pressure sensor is reading inaccurately during the harsh events and the pressure is actually the same as during smooth engagements
- D. A cushioning component in the forward clutch circuit — such as the accumulator or its orifice — is intermittently failing to absorb pressure, causing the spike

26. A technician is performing a transmission fluid level check on a vehicle that has no dipstick — the level must be checked through a fill plug on the side of the case at a specific fluid temperature. The service information states the fluid must be at 95-105°F when the plug is removed. The technician checks the fluid at 150°F. Will this produce an accurate reading?

- A. Yes — a higher temperature reading simply means more fluid will drain from the fill plug, providing a more conservative level assessment
- B. The technician should wait for the fluid to cool to the specified range, then recheck — at 150°F the fluid has expanded and will read higher than actual cold level
- C. No — the expanded hot fluid will overflow from the fill plug, and the technician will remove fluid that is actually needed when the fluid cools to normal volume
- D. Yes — checking at a higher temperature is acceptable because the fill plug is positioned to account for thermal expansion up to 200°F

27. A customer brings a vehicle in for a fluid leak inspection. The technician finds a wet area around the transmission range sensor on the side of the case. Upon closer inspection, the wet area appears to be a slow seep rather than an active drip. The fluid level is correct. What is the MOST appropriate action?

- A. Replace the range sensor O-ring, clean the area, and recheck for leaks after a road test to confirm the repair resolved the seep
- B. Monitor the seep at the next oil change and replace the O-ring only if the seep has worsened to an active drip that affects fluid level
- C. Replace the entire range sensor assembly because a seeping O-ring indicates the sensor bore has worn beyond the O-ring's sealing capacity
- D. Apply thread sealant to the sensor threads and retighten to the specified torque to compress the O-ring more firmly against the bore

28. A vehicle's shift cable bracket on the transmission case has cracked, allowing the cable housing to move approximately 1/4 inch during gear changes. The technician discovers the crack during an unrelated service. Currently, all gears engage but the customer has not reported any complaints. What should the technician recommend?

- A. No action needed since all gears currently engage and the customer has not noticed any drivability changes from the cracked bracket
- B. Tighten the bracket bolts to compress the cracked area and restore rigidity without replacing the bracket assembly
- C. Replace the shift cable bracket immediately because the progressive crack will eventually cause complete bracket failure and loss of gear selection
- D. Weld the cracked bracket in place and add a supplemental bracket clamp to provide additional support for the cable housing

29. A technician replaces the transmission fluid temperature sensor. After clearing codes and performing a road test, the scan tool shows the TFT reading at 72°F initially (matching shop temperature), rising to 196°F after 30 minutes of driving. However, the technician notices that the temperature reading rises unusually slowly during the first 10 minutes — staying below 100°F for longer than expected. What could cause the sluggish initial temperature rise?

- A. The replacement sensor has a slower response time than the original, causing a lag in temperature reporting during rapid warmup periods

- B. The sensor was installed without its heat-conducting compound, creating an air gap between the sensor and the fluid that slows heat transfer
- C. The transmission cooler thermostat is stuck open, routing fluid through the cooler from startup and removing heat before it reaches operating temperature
- D. The sensor is installed in the correct location but the fluid circulation pattern brings cold fluid past the sensor first during initial warmup

30. A customer reports that the transmission shift lever occasionally sticks in the Park position and requires excessive force to move to Reverse. The sticking occurs randomly — sometimes several times per day, other times not at all for a week. When it sticks, the customer must press the brake pedal firmly to release the lever. There are no DTCs. What is the MOST LIKELY cause?

- A. An intermittent shift interlock solenoid that occasionally fails to release when the brake pedal is pressed, requiring extra pedal force to activate it
- B. The parking pawl settling under vehicle weight on the parked gear tooth, requiring more force to disengage when the load angle is higher
- C. A worn brake pedal switch that intermittently delays the interlock release signal, making the lever feel stuck until the switch finally activates
- D. A corroded shift cable that binds at random points in its travel, creating resistance that feels like the lever is stuck in Park

31. A technician discovers that a transmission pan bolt is loose — it can be turned by hand. The remaining bolts are at specification torque. The technician tightens the loose bolt to specification. Is this repair adequate?

- A. Yes — provided the technician inspects the gasket at the loose bolt location for damage and verifies no leak exists after a road test
- B. No — all pan bolts should be loosened and retorqued in the correct sequence because the single loose bolt may have shifted the gasket
- C. Yes — a single loose bolt among properly torqued bolts does not require any additional action beyond tightening to specification

D. No — the loose bolt indicates the thread in the case is beginning to strip, and a thread repair insert should be installed preventively

32. A vehicle's automatic transmission has a slow leak from the extension housing area on a rear-wheel-drive vehicle. The technician replaces the output seal. Two weeks later, the customer returns with the same leak. The technician inspects and finds the new seal leaking at the driveshaft yoke. What is the MOST LIKELY cause of the repeated failure?

A. The replacement seal was the wrong material specification for this application and degraded from ATF chemical exposure within two weeks

B. The driveshaft slip yoke has a rough surface, a corrosion pit, or a wear groove at the seal contact area that damages the new seal lip

C. The extension housing bushing is worn and allows the yoke to orbit eccentrically, rapidly wearing out the new seal from uneven contact

D. Both the worn bushing and the damaged yoke surface are contributing to the repeated seal failure and both must be addressed simultaneously

33. A technician is replacing a solenoid on the valve body through the pan opening. After installing the new solenoid with its O-ring, the technician pushes the solenoid into the bore and it seats with noticeably less resistance than the old solenoid. What should the technician verify before proceeding?

A. That the new solenoid's O-ring is the correct size — if it is too small, the solenoid will seat easily but will not seal the bore properly

B. That the solenoid bore has not worn oversize from the previous solenoid's operation, requiring a larger O-ring for proper sealing

C. That the new O-ring is the correct size and properly seated on the solenoid body, and that the bore is clean and the correct diameter

D. That the solenoid is the correct part number, since different solenoids for the same valve body may have different body diameters

34. A customer reports that the transmission shifts normally in all gears but the vehicle has developed a new vibration during highway cruising that was not present before the last transmission fluid service. The vibration is speed-dependent and present in all gears and Neutral. What should the technician investigate?

A. Whether the technician disturbed the driveshaft, exhaust, or a splash shield during the pan removal that is now contacting a rotating component

B. Whether the new fluid has a different viscosity than the specified fluid, causing the torque converter to produce a vibration from incorrect coupling

C. Whether the transmission mount was loosened during the pan service and is now allowing excessive case movement at highway speed

D. Whether the filter was installed incorrectly and is restricting pump intake, causing cavitation vibration that increases with pump speed

35. A technician replaces both transmission cooler lines on a vehicle. After the repair, the technician starts the engine, shifts through all gears, and road-tests the vehicle. After 20 minutes of driving, the fluid temperature reads 235°F (specification maximum: 200°F). The original lines were steel; the replacements are the same specification steel lines. What should the technician check FIRST?

A. A kink in one of the newly installed cooler lines that has occurred during routing through the engine compartment or under the vehicle

B. The cooler thermostat for a stuck-open condition that routes fluid through the cooler continuously and paradoxically causes overheating

C. The fluid type used during the line replacement top-off to verify the correct specification fluid was added to replace any lost during the service

D. The radiator cap pressure rating since cooler line replacement may have introduced air into the cooling system that reduces heat transfer

36. A technician is performing an in-vehicle valve body replacement. The new valve body requires the technician to transfer the internal wiring harness from the old valve body to the new one. During the transfer, one connector pin breaks off. What should the technician do?

- A. Install the valve body with the broken pin and determine which circuit is affected by the missing connection during the road test
- B. Repair the broken pin using a splice connector and heat shrink tubing to restore the circuit before completing the valve body installation
- C. Order a replacement pin terminal from the harness manufacturer and install it in the connector housing before proceeding
- D. Replace the internal wiring harness entirely because a broken pin indicates the harness has aged beyond its reliable service life

37. A customer reports that the transmission operates normally except when the vehicle is started after sitting for exactly 8-12 hours. Under this condition, the first Park-to-Drive engagement produces a harsh "thunk" that shakes the entire vehicle. If the vehicle sits for less than 4 hours or more than 24 hours, the engagement is smooth. What is the MOST unusual aspect of this symptom, and what does the specific time window suggest?

- A. The 8-12 hour window corresponds to the time required for the engine oil to drain back to the pan, causing a dry start condition that shocks the drivetrain
- B. The 8-12 hour window is the time required for the ATF friction modifiers to stratify within the fluid, causing the first engagement to grab harshly
- C. The 8-12 hour window corresponds to the drain-back rate of a specific clutch circuit that drains enough to jerk on refill but refills passively after 24 hours
- D. The 8-12 hour window matches the thermal cycling rate of the transmission case, where the metal contracts to its maximum at 8 hours and relaxes by 24 hours

38. A technician is preparing to install a rebuilt transmission. Before installation, the technician checks the torque converter for proper engagement by measuring the distance from the converter mounting pads to the edge of the bell housing. The measurement is 1/2 inch. The specification is 3/8 inch minimum depth (pad must be at least 3/8 inch behind the bell housing edge). Does this measurement confirm proper converter seating?

- A. Yes — the 1/2 inch measurement exceeds the 3/8 inch minimum depth requirement, confirming the converter is seated far enough into the pump

B. No — the converter is seated too deep and may not reach the flexplate mounting pads when the transmission is bolted to the engine

C. Yes — but only if the technician also verifies the converter rotates freely by hand, confirming no binding between the converter and the pump

D. No — the specification requires exactly 3/8 inch, and the 1/2 inch measurement indicates the converter pilot is not fully engaged in the pump bore

39. During a transmission overhaul, a technician discovers that one accumulator piston has a small chip on its outer sealing surface — approximately 1/16 inch of material is missing from the piston's outer diameter where the seal rides. What is the consequence of reinstalling this piston?

A. The chipped surface will damage the new O-ring seal, causing pressure to bypass the piston and eliminating the accumulator's cushioning function for that shift

B. The chip is too small to affect the O-ring seal and the piston can be reused without concern for shift quality or cushioning function

C. The chipped piston will cause the accumulator to over-cushion the shift because the pressure leak slows the piston's response during clutch apply

D. The chip will cause the piston to bind in the bore at the damaged area, preventing the accumulator from moving during the shift event

40. A technician measures clutch pack clearance during reassembly and reads 0.065 inches. The manufacturer's specification is 0.025 to 0.050 inches. The technician has the following selective snap rings: 0.060" (currently installed), 0.070", 0.080", and 0.090". What is the minimum snap ring thickness that will bring the clearance within specification?

A. The 0.070" snap ring, which reduces clearance by 0.010" to approximately 0.055" — still above the specification maximum of 0.050"

B. The 0.080" snap ring, which reduces clearance by 0.020" to approximately 0.045" — centered in the specification range

C. The 0.090" snap ring, which reduces clearance by 0.030" to approximately 0.035" — well within the specification range

D. The 0.080" snap ring is the minimum thickness needed to bring the 0.065" clearance below the 0.050" maximum specification limit

41. A technician discovers during a transmission overhaul that the valve body separator plate has a barely visible hairline crack between two adjacent oil passages. The crack does not appear to extend through the full thickness of the plate. What is the correct action?

A. Apply epoxy sealant to the crack surface and reinstall the plate, since the crack has not penetrated through the full thickness

B. Verify the crack depth by applying pressurized air to one passage and checking for air leakage at the adjacent passage surface

C. Replace the separator plate because even a hairline crack between passages creates a potential cross-leak path that will worsen under pressure

D. Mark the crack endpoints with a scribe and reinstall the plate, monitoring for symptoms at the first road test to determine if the crack affects operation

42. A technician is assembling a clutch pack during a transmission rebuild. The friction discs have internal splines that engage the clutch hub, and the steel separator plates have external tabs that engage the clutch drum. During assembly, the technician notices that one steel plate's external tab does not align with the drum slot — it is approximately 1/16 inch too wide. What should the technician do?

A. File the tab to the correct width so it fits into the drum slot smoothly without binding during clutch engagement and release

B. Verify the steel plate is the correct part for this specific clutch by comparing its tab dimensions to the other plates and the rebuild kit specifications

C. Install the plate in a different rotational orientation so the wide tab aligns with a wider slot in the drum that accommodates dimensional variation

D. Discard the plate and use a plate from the old clutch pack that fits correctly, since used plates with correct dimensions are acceptable

43. A technician performs endplay measurement during reassembly and reads 0.048 inches. The specification is 0.020 to 0.040 inches. The currently installed selective thrust washer is 0.050 inches thick. What thickness washer should the technician install?

A. A 0.055-inch washer to reduce endplay by 0.005 inches to approximately 0.043 inches — closer to but still above the maximum specification

B. A 0.065-inch washer to reduce endplay by 0.015 inches to approximately 0.033 inches — well within the specification range

C. A 0.060-inch washer to reduce endplay by 0.010 inches to approximately 0.038 inches — within the specification range

D. A 0.058-inch washer to reduce endplay by 0.008 inches to approximately 0.040 inches — at the maximum limit of the specification

44. A technician has completed a transmission rebuild and is performing the initial startup. After filling with fluid and starting the engine, the pump operates quietly and fluid circulates normally. The technician shifts from Park to Drive — the transmission engages smoothly. During the road test, all upshifts are smooth and correctly timed. However, every downshift — kickdown, coast-down, and manual — produces a noticeable "bump." What single assembly error would MOST LIKELY affect every downshift while leaving upshifts unaffected?

A. An incorrectly assembled one-way clutch that freewheels when it should hold during downshifts but locks correctly for upshifts

B. A missing or displaced check ball in the downshift timing circuit that prevents proper cushioning during every downshift transition

C. Incorrect endplay that causes the gear train to shift axially during every downshift's thrust load reversal but not during upshifts

D. A servo return spring installed backward that prevents the servo from retracting quickly enough during the releasing phase of each downshift

45. After installing a rebuilt transmission, the technician performs the initial fluid fill and startup. The fluid level reads correct on the dipstick. The technician shifts to Drive and the engagement is smooth.

During the road test, the first three upshifts are smooth, but the 3-4 shift produces a harsh slam. All subsequent 3-4 shifts during the road test are equally harsh. What should the technician investigate?

- A. The 3-4 accumulator for a stuck or missing component that prevents cushioning specifically during the 3-4 shift event
- B. The adaptive learning system for a failure to learn the 3-4 shift parameters despite successfully learning all other shift events
- C. The 3-4 check ball position, accumulator piston and spring, or the 3-4 circuit orifice for a specific cushioning deficiency
- D. The 3-4 clutch clearance for a value that is significantly tighter than specification, causing the clutch to grab harshly on every apply

46. A technician performs a cooler flow test after flushing the cooler system following a transmission rebuild. The forward flow produces one quart in 20 seconds. The reverse flow produces one quart in 21 seconds. The specification minimum is one quart in 25 seconds. Both rates exceed specification. The technician also notes that the exiting fluid appears clear with no discoloration. What should the technician conclude?

- A. The cooler passes the flow test but should be retested after the first 500 miles of driving to verify no residual debris releases during operation
- B. The cooler passes all criteria — adequate bidirectional flow and clean fluid exit — and is approved for connection to the rebuilt transmission
- C. The cooler should be replaced despite passing the flow test because the nearly identical forward and reverse rates indicate loss of internal baffling
- D. The cooler needs one more flush cycle because the clear exit fluid means the flushing solvent has not been completely purged from the core

47. A technician has completed a major transmission overhaul and installation. During the post-installation quality inspection, the technician discovers that one bell housing bolt was inadvertently left out — only 5 of the 6 specified bolts are installed. The remaining 5 bolts are properly torqued. Should the technician install the missing bolt?

- A. The missing bolt does not need to be installed since 5 of 6 bolts provide adequate clamping force for the bell housing alignment
- B. The missing bolt should be installed but does not require the transmission to be dropped, since it can be accessed from under the vehicle
- C. The missing bolt should be installed only if the technician can verify the bolt hole is accessible without removing the transmission from the vehicle
- D. The missing bolt must be installed because every bell housing bolt contributes to the alignment, clamping force, and vibration damping of the assembly

48. A technician discovers during a transmission overhaul that the pump drive hub on the torque converter has a slight wear ridge at the front pump seal contact area. The ridge is barely detectable by fingernail but measurable at 0.001 inches. The new front pump seal has a spring-loaded lip. Is this converter hub acceptable for reuse with the new seal?

- A. Yes — a 0.001-inch ridge is within the tolerance that a spring-loaded lip seal can accommodate without leakage during normal operation
- B. No — any measurable wear ridge will eventually cause the new seal to leak, and the converter must be replaced or the hub resurfaced
- C. Yes — but only if a wear sleeve is installed over the hub to provide a new, smooth surface for the seal lip contact area
- D. No — the converter must be replaced because hub resurfacing is not a standard repair procedure and always results in an out-of-round condition

49. A technician completes a transmission rebuild and installation. All shifts are smooth and TCC operates correctly during the road test. However, the customer returns after one week reporting that the transmission "sometimes delays" when shifting from Park to Drive first thing in the morning. The delay lasts approximately 2 seconds and occurs only on the first engagement of the day. What is the MOST LIKELY cause?

- A. The rebuilt transmission's forward clutch piston seals are defective and allow the circuit to drain completely overnight, requiring refill each morning

- B. The torque converter drain-back plug was left loose during installation, allowing the converter to lose its fluid charge overnight
- C. Normal forward clutch circuit drain-back through the valve body during extended parking, producing a brief refill delay on the first engagement
- D. The rebuilt oil pump has excessive clearances that prevent it from building adequate pressure quickly enough during the first morning cold start

50. A technician has completed 850 practice questions across seventeen simulation exams. The technician's average score has stabilized at 84% over the last five exams. The technician consistently misses questions involving scan tool data interpretation — particularly questions that require calculating gear ratios from speed sensor PIDs and interpreting adaptive learning values. What is the MOST effective study strategy for the remaining three exams?

- A. Continue taking full practice exams to maintain the overall score and rely on the repeated exposure to scan tool questions to improve naturally
- B. Focus specifically on ratio calculation practice and adaptive value interpretation by reviewing the answer explanations for every scan tool data question missed
- C. Memorize the gear ratios and adaptive value ranges for the most common transmissions to reduce the need for calculation during the exam
- D. Skip the scan tool questions on future practice exams and focus time on the mechanical diagnosis and repair questions where scores are already strong

## Practice Exam 17: Answer Key and Explanations

1. C — Two previous shops replaced the fluid and the valve body — the two most common remedies for shift quality issues — without resolving the shudder. When the most probable causes have been eliminated through competent repairs, the technician must expand the diagnostic scope to include less-common causes. The torque converter, which was never tested or replaced, contains the TCC friction surface and internal bearings that can produce shift-specific shudder. Repeating previously failed repairs wastes the customer's time and money.

2. B — Both Drive and Reverse stall speeds are equally 500 RPM below specification. If the transmission clutches were slipping, the engine would over-rev past specification — stall speed would be HIGH, not low. Equal low stall in both ranges with the clutches holding confirms the engine cannot produce enough torque to reach the specified RPM against the converter's load. The transmission is

functioning correctly; the engine has a performance deficiency — restricted intake, fuel delivery fault, ignition timing error, or exhaust restriction.

3. D — The noise is present in all forward gears and Neutral but stops in Park. In Neutral, the output shaft continues rotating with the vehicle's momentum — the planetary elements, output shaft, and everything downstream keep spinning. In Park, the parking pawl locks the output shaft and everything connected to it stops rotating. A component on or downstream of the output shaft that stops when the output shaft is locked is the source — likely a chipped gear, worn bearing, or loose component on the output shaft.

4. A — Both technicians are correct. In most front-engine vehicles, the transmission oil pump is driven by the torque converter, which is driven by the engine. With the engine off during towing, the pump does not operate and internal components run without lubrication. However, Technician B correctly notes that some older or specialty transmissions have a rear-mounted auxiliary pump driven by the output shaft that provides lubrication during towing — though this design is uncommon in modern vehicles.

5. D — A single pop at the exact moment of every 2-3 upshift — present at all throttle levels for 5,000 miles without worsening — indicates a component that shifts position once during the specific thrust load change of the 2-3 transition. Excessive internal endplay allows the gear train to move axially when the direction and magnitude of thrust loading changes during the 2-3 shift. The components impact their axial travel limits, producing the pop. The consistent, non-worsening nature confirms the endplay has stabilized.

6. B — The scan tool confirms the module is commanding 1st gear, but the transmission physically starts in 2nd. This disconnect between electronic command and mechanical result means the hydraulic or mechanical path between the module's solenoid command and the 1st gear holding device is not functioning. The solenoid may not be producing adequate force, the shift valve may be stuck, or the holding device itself may not be applying despite receiving the solenoid command.

7. A — A groaning noise from the pump area during the first 30 seconds of cold operation that fades with warmup is characteristic of pump cavitation. Cold, viscous ATF resists flowing through the filter and intake passages, partially starving the pump. The pump draws air along with the thick fluid, producing the groaning cavitation noise. As the fluid warms and its viscosity drops, flow resistance decreases, the pump receives a full charge of fluid, and the cavitation stops.

8. D — The engine flares 300 RPM specifically during the 4-3 downshift — no other downshift is affected — and all upshifts including the 3-4 are smooth. A flare during a downshift means the lower gear's clutch is slow to apply after the higher gear releases. The 3rd gear clutch apply circuit is not building pressure quickly enough during the 4-3 transition, allowing the engine to accelerate freely for 0.5 seconds before the 3rd gear clutch finally engages and absorbs the engine torque.

9. C — A persistent TCC shudder during lockup engagement at 45 mph that was not resolved by a correct fluid service 2,000 miles ago indicates the problem is mechanical, not chemical. Fresh friction modifiers in the new fluid cannot restore a TCC friction surface that has worn, glazed, or heat-damaged beyond recovery. The converter must be replaced to install a new TCC friction disc. Further fluid services will not address worn friction material.

10. A — Both technicians are correct. With the ring gear held, sun input to carrier output produces forward rotation at a reduced speed — this is gear reduction (the carrier speed is slower than the sun speed). With the carrier held, sun input to ring output produces reverse rotation — the ring gear rotates in the opposite direction of the sun gear because the planet gears act as idler gears. Both are fundamental planetary gear set operating principles.

11. B — While it is technically possible to replace only the worn direct clutch pack, industry best practice strongly recommends a complete overhaul when the transmission is opened. All internal components — seals, bushings, thrust washers, and other clutch packs — have the same mileage and are subject to similar progressive wear. Replacing only one component and reassembling leaves every other worn component in place, increasing the risk of a second failure and a second labor-intensive repair shortly after the first.

12. D — The solenoid coil resistance is within specification at 5.2 ohms, confirming the coil itself is intact. However, the actual current at the solenoid connector is only 0.3 amps instead of the expected 0.9 amps during a 50% duty cycle command. Low current with a good coil means the voltage arriving at the solenoid is insufficient to drive the expected current through the coil's resistance. A high-resistance fault in the wiring between the TCM output and the solenoid connector is consuming the voltage before it reaches the coil.

13. A — The calculated ratio of 1.41:1 in a gear that should be 0.67:1 overdrive is dramatically wrong. In 6th gear at 0.67:1, the output shaft should spin faster than the input shaft (overdrive). Instead, the data shows the input spinning faster (1,900 vs. 1,350) — a gear reduction. The module commands 6th, but the transmission is physically in a lower gear (the 1.41:1 ratio likely corresponds to 3rd). A stuck shift solenoid or bound valve is preventing the shift to 6th despite the electronic command.

14. C — All other manual downshift requests at any speed execute immediately, confirming the paddle shifter, wiring, and module input are functional. The 10-9 downshift at 70 mph is the specific combination being refused. The module's downshift protection logic calculates that shifting from 10th to 9th at 70 mph would push the engine RPM above its safe redline limit. The module inhibits the downshift to protect the engine from over-revving, which is a designed safety feature.

15. B — The sensor resistance and wiring pass static testing. The PID reads correctly for extended periods, then drops to 0 RPM for exactly 0.5 seconds before recovering — three times in 45 minutes. This intermittent dropout pattern with normal static tests is the classic signature of a marginal electrical connection that opens briefly under specific vibration conditions. A loose connector pin, corroded terminal, or wire with compromised insulation makes and breaks contact at specific vibration frequencies during highway driving.

16. D — All clutch adaptations are moderately positive (+12% to +18%), reflecting normal progressive wear across the friction surfaces. The TCC adaptation at +38% is significantly higher, indicating the TCC friction material has worn disproportionately more than the clutch packs. The module has progressively increased the TCC apply pressure to compensate for the declining friction coefficient of the worn TCC surface. This elevated adaptation is a leading indicator that the TCC may eventually exceed the adaptive system's compensation range.

17. A — A distinct thump with an instantaneous 0.3:1 ratio change at a specific speed during smooth acceleration indicates the CVT pulleys are sticking at a ratio position and then releasing abruptly. The pulley actuator or its control valve cannot maintain smooth ratio control at this specific position — perhaps from varnish, debris, or a worn actuator component. The sudden release produces the thump as the ratio jumps 0.3:1 instantly instead of changing gradually.

18. C — The mechanical gauge reads 80 psi (matching specification), proving the pump and regulator are producing correct system pressure. The internal sensor reads only 52 psi at the same operating condition — 28 psi lower than reality. This discrepancy means the sensor is not accurately reading the actual pressure. The sensor has failed internally and is producing a lower-than-actual voltage output, causing the module to interpret the signal as low pressure and set the DTC.

19. B — The cruise control disengages during moderate acceleration — not during shifts, not during braking, and not from a speed sensor fault. During acceleration at highway speed, the module may command TCC release to provide the torque multiplication needed for the passing maneuver. The momentary speed change when the TCC transitions from mechanical lockup to fluid coupling produces a brief vehicle speed variation that exceeds the cruise control module's programmed speed deviation tolerance.

20. D — A CAN bus communication fault affecting multiple modules simultaneously — causing the "Bus Off" code — indicates the shared communication hardware has failed. The CAN bus is a physical wire network with specific electrical characteristics maintained by termination resistors at each end. A shorted bus wire, an open wire, a failed termination resistor, or a water-damaged connector can disrupt the entire network, causing all modules on the affected bus segment to lose communication.

21. C — In a DCT, the shift occurs by transferring torque from one clutch to the other. Clutch 1 (carrying the odd gear) progressively releases while Clutch 2 (carrying the pre-selected even gear) progressively applies — the torque smoothly transfers from one input shaft to the other over the 0.3-second transition. This simultaneous decrease-increase pattern is the fundamental operating mechanism of every DCT upshift, providing seamless power delivery without the torque interruption of a conventional single-clutch transmission.

22. D — The TCC and 1st gear circuits use separate hydraulic passages with no shared components — yet both have codes. A system-wide pressure deficiency from a worn pump or stuck-open regulator valve reduces pressure to ALL circuits equally. The TCC circuit loses enough pressure that it cannot achieve lockup (P0741), and the 1st gear holding device loses enough pressure that it slips and produces an incorrect ratio (P0731). One root cause — low system pressure — explains both independent circuit failures.

23. B — A negative TCC slip value that increases proportionally with speed (-10 at 55, -15 at 65, -20 at 75) indicates a systematic measurement discrepancy between the engine RPM sensor and the input speed sensor that scales with rotational speed. Both sensors measure the same mechanical connection (TCC is locked), but minor calibration differences between the two independent sensors produce a small offset that grows proportionally with speed. This is a normal sensor tolerance variation with no operational significance.

24. A — The stop/start engagement delay has progressively worsened from the vehicle's new condition, indicating a wear-related deterioration. The auxiliary electric pump maintains clutch apply pressure during the engine-off period. As the pump's internal components wear over thousands of stop/start cycles, its pressure output decreases. The clutch circuit loses more pressure during each engine-off event, requiring more time to re-pressurize upon restart, producing the progressive engagement delay.

25. D — The EPC solenoid commands the same pressure during both harsh and smooth engagements, confirming the pressure regulation system is consistent. However, the forward clutch pressure sensor shows a 15 psi spike during the harsh events — meaning something in the forward clutch circuit is intermittently failing to absorb the pressure wave. A sticking accumulator piston, a displaced check ball,

or an intermittently blocked orifice allows full pressure to reach the clutch piston without cushioning, producing the random harshness.

26. C — At 150°F, the fluid has thermally expanded beyond its volume at the specified 95-105°F checking temperature. The expanded hot fluid fills more space in the pan, reading higher on the fill plug than it would at the correct temperature. If the technician drains fluid to match the fill plug level at 150°F, the transmission will be underfilled when the fluid cools and contracts to normal operating volume. The check must be performed at the specified temperature range.

27. A — A slow seep at the range sensor O-ring is an active leak — it is currently losing fluid, even if slowly. Waiting for it to worsen risks fluid level loss between service visits and allows ATF to contact wiring and connectors where it can cause damage. The correct action is to replace the O-ring, clean the area, and verify the repair with a road test. This addresses the leak at its current minor stage before it progresses.

28. C — A cracked cable bracket that allows 1/4 inch of cable movement will progressively worsen from the cyclic stress of every gear change. The crack will continue to grow until the bracket fails completely, at which point the cable housing loses its fixed reference and the driver loses the ability to select gears reliably. Replacing the bracket now prevents the inevitable complete failure that would leave the customer stranded.

29. A — The sensor reads correctly at ambient temperature and at operating temperature — both endpoints are accurate. The unusually slow initial temperature rise suggests the sensor has a slower response characteristic than the original. Different sensor manufacturers or production lots may have slightly different thermal response times — the time it takes the sensor's thermistor to equilibrate with the surrounding fluid temperature. The slower response delays the reported warmup curve.

30. A — The shift lever sticks in Park randomly and releases with firm brake pedal pressure. The shift interlock solenoid is an electrically controlled device that holds the shift lever in Park until the brake pedal activates the brake switch, which signals the solenoid to release. An intermittent solenoid — one that occasionally fails to respond to the brake switch signal promptly — requires extra pedal force or multiple attempts to activate. The random occurrence matches an intermittent electrical component.

31. A — A single loose bolt among properly torqued bolts requires tightening to specification and verification. The technician should inspect the gasket at the loose bolt location for displacement, extrusion, or damage from the reduced clamping force. After tightening, a road test verifies no leak

exists at that location. If the gasket is undamaged and no leak appears, the repair is adequate without disturbing the remaining properly torqued bolts.

32. D — The repeated seal failure after two weeks points to a root cause that was not addressed during the first repair. The most comprehensive explanation is that both the extension housing bushing and the driveshaft yoke sealing surface are contributing. A worn bushing allows the yoke to orbit eccentrically (accelerating seal wear), and a rough or grooved yoke surface abrades the seal lip (damaging it directly). Both conditions must be corrected simultaneously to achieve a lasting repair.

33. C — A new solenoid that seats with noticeably less resistance could indicate a correct fit (new O-rings compress smoothly) or a problem (undersized O-ring or worn bore). The technician must verify the O-ring is the correct size and properly seated on the solenoid body, and that the bore is clean and the correct diameter. If the O-ring is correct and the bore is within specification, the easier insertion may simply reflect the new O-ring's superior elasticity compared to the old hardened one.

34. A — The vibration is speed-dependent, present in all gears and Neutral (eliminating transmission-internal sources), and appeared immediately after a transmission pan service. During pan removal, the technician may have inadvertently disturbed the driveshaft, loosened an exhaust hanger, displaced a splash shield, or moved a component that now contacts a rotating element. Checking all components that were physically near the work area is the logical first step.

35. B — The vehicle overheats to 235°F after cooler line replacement with correct specification lines. The most common cause directly related to line replacement is a kink in one of the newly installed lines. A kink restricts the volume of fluid flowing through the cooler, reducing the cooling system's ability to dissipate heat. The technician should visually inspect the entire routing path of both new lines for any bend that compresses or narrows the line's internal diameter.

36. C — A broken connector pin must be properly repaired to restore the electrical circuit. The correct repair is to obtain the correct replacement pin terminal — matching the size, material, and configuration of the original — and install it in the connector housing with proper crimping and seating. Installing the valve body with a missing circuit connection risks solenoid malfunction. A splice connector inside a valve body connector housing is not a reliable repair in this high-vibration, fluid-exposed environment.

37. C — The 8-12 hour window is the critical clue. After 4 hours, the forward clutch circuit has partially drained but still retains enough fluid for a smooth engagement. Between 8-12 hours, the circuit has drained to its maximum extent — the engagement must rapidly refill the empty circuit, producing the harsh thunk. After 24 hours, the circuit has had enough time for fluid to passively seep back through the

valve body passages by capillary action, partially refilling the circuit and softening the engagement again.

38. A — The specification requires the converter mounting pads to be at least 3/8 inch behind the bell housing edge. The measured 1/2 inch exceeds this minimum, confirming the converter is seated deep enough into the pump to clear the flexplate-to-bell-housing gap when the transmission is bolted to the engine. A converter that is not deep enough (less than 3/8 inch) would contact the flexplate before the bell housing seats flush, potentially damaging the pump.

39. A — The piston's outer sealing surface has a chip that creates a gap in the surface where the O-ring seal must maintain continuous contact. The O-ring rides over the chip and either cannot seal the gap or is cut by the sharp edge of the missing material. In either case, pressurized fluid bypasses the piston through the chipped area, preventing the accumulator from building the controlled resistance needed to cushion the clutch apply event.

40. B — The current clearance is 0.065 inches — 0.015 above the maximum specification of 0.050. The 0.070-inch ring (0.010 thicker) would reduce clearance to 0.055 — still above specification. The 0.080-inch ring (0.020 thicker) would reduce clearance to approximately 0.045 — within the 0.025-0.050 range. The 0.090-inch ring would produce 0.035 — also within range but unnecessarily tight. The 0.080-inch ring is the minimum thickness that brings the clearance within specification.

41. C — A hairline crack between two adjacent oil passages in the separator plate creates a direct leakage path for pressurized fluid. Even if the crack has not fully penetrated the plate's thickness, the high hydraulic pressures during operation will force fluid through the crack, causing cross-circuit leakage. This leakage can produce pressure loss in one circuit and unintended pressure in the adjacent circuit. The plate must be replaced to ensure reliable circuit isolation.

42. B — A steel plate with an external tab that doesn't fit the drum slot should not be forced, filed, or installed in an alternate orientation. The technician must verify the plate is the correct part for this specific clutch. Rebuild kits sometimes include plates for multiple applications, and the wrong plate may have been selected. Comparing the tab dimensions to the other plates and the rebuild kit specifications confirms whether it is the correct part or a mismatch.

43. C — The endplay is 0.048 inches — 0.008 above the maximum specification of 0.040. The current washer is 0.050 inches. A 0.060-inch washer (0.010 thicker) reduces endplay by approximately 0.010 inches:  $0.048 - 0.010 = 0.038$  inches, which falls within the 0.020-0.040 specification range. A 0.055-

inch washer would only reduce it to 0.043 — still above specification. The 0.060-inch washer is the correct choice.

44. D — Every downshift is harsh while all upshifts are smooth. During upshifts, the releasing device (band or clutch) releases while the applying device engages. During downshifts, the sequence reverses — the higher-gear device releases and the lower-gear device applies. If a servo return spring is installed backward, the servo cannot retract quickly enough during the release phase of each downshift, causing the releasing band to drag briefly against the applying clutch, producing the bump on every downshift.

45. A — The 3-4 shift consistently produces a harsh slam while all other shifts — including the 4-3 downshift — are smooth. A shift-specific harshness that is consistent on every occurrence and does not respond to adaptive learning points to a mechanical deficiency in the 3-4 cushioning system. The 3-4 accumulator piston may be stuck, the spring may be missing or incorrect, or the check ball controlling the 3-4 accumulator feed may be displaced or absent.

46. B — Both directional flow rates (20 and 21 seconds per quart) exceed the specification minimum of 25 seconds per quart. The nearly equal forward and reverse rates confirm no directional restriction exists. The clear, undischored exit fluid confirms the flushing procedure successfully removed all contamination from the cooler core. All three criteria — adequate bidirectional flow and clean fluid exit — are met. The cooler is approved for service.

47. D — Every bell housing bolt serves a critical function: it maintains the precise alignment between the engine crankshaft centerline and the transmission input shaft centerline, provides the clamping force that holds the two castings flush, and contributes to the assembly's stiffness that dampens vibration. A missing bolt creates an unsupported span that can allow misalignment, vibration, and eventual fatigue cracking at the adjacent bolt holes. The bolt must be installed.

48. C — A 0.001-inch wear ridge on the converter hub at the seal contact area is very minor. A spring-loaded lip seal is specifically designed to maintain contact pressure against minor surface imperfections through its internal garter spring. However, installing a wear sleeve over the hub provides the most reliable long-term solution — it places a brand-new, precision-finished surface at the seal contact area that eliminates any concern about the ridge's effect on seal longevity.

49. C — A 2-second delay on the first Park-to-Drive engagement each morning — with all subsequent engagements being immediate — is a common characteristic of many automatic transmissions. During overnight parking, the forward clutch circuit slowly drains back through the valve body passages under the force of the clutch return spring. The first engagement requires the pump to refill this drained circuit.

Once filled, the circuit remains charged for all subsequent engagements until the next extended parking period.

50. B — The technician has identified a specific weakness: scan tool data interpretation, particularly gear ratio calculations and adaptive value analysis. The most efficient improvement strategy is targeted remediation — reviewing the detailed answer explanations for every missed scan tool data question to understand the calculation method, the diagnostic significance, and the correct interpretation. Understanding why each wrong answer was wrong builds the analytical framework needed for exam-day performance.