

# PRACTICE EXAM 20 — QUESTIONS 1-40

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1. A bus accelerates poorly from a stop, fluid level and condition are good, and a stall test reads above specification. Considering both clues together, the MOST likely cause is:

- A. The engine over-producing power
- B. A seized stator
- C. Slipping clutches or low apply pressure
- D. A locked converter

2. A bus overheats only at highway speed, and scan data shows the converter never reports lockup achieved. Together, these clues point to:

- A. The differential lubricant
- B. A wheel seal
- C. The lockup clutch and its control circuit
- D. The driveshaft slip yoke

3. Fluid is low with no external leak and appears milky, and the engine coolant level is also dropping. Together, these findings indicate:

- A. An out-of-phase driveshaft
- B. A worn ring and pinion
- C. An over-adjusted wheel bearing
- D. An internally failed fluid-to-coolant cooler

4. A bus shifts fine cold but slips under load when warm, and the fluid is at the correct level but dark and burnt. Together, these clues indicate:

- A. Normal operation
- B. A driveshaft phasing error
- C. Degraded fluid with likely clutch wear; find the heat source
- D. An over-adjusted wheel bearing

5. Pressure testing shows normal line pressure overall, but one clutch circuit reads low while others are normal. Together, these results indicate:

- A. A worn pump
- B. A faulty regulator
- C. A leak in that specific clutch circuit
- D. A low overall fluid level

6. A transmission shifts poorly two days after a mechanically correct overhaul, and the technician confirms the internal work was done right. Together, these facts point to:

- A. Adaptives not reset and relearned
- B. A refill of the differential
- C. A driveshaft replacement
- D. A clogged axle breather

7. A bus stalls the engine when stopping in gear, and the converter is suspected. Considering converter function, the MOST likely cause is:

- A. A lockup clutch failing to release
- B. A normally freewheeling stator
- C. A slightly high fluid level
- D. A disconnected impeller

8. A bus shows a harsh upshift, fluid is good, no codes are set, and pressure testing reveals high apply pressure. Together, these clues indicate:

- A. An early off-going release
- B. A non-locking converter
- C. A pressure control fault commanding excessive pressure
- D. A plugged axle breather

9. A bus with an integral retarder shows weak retarding and a high fluid temperature reading. Together, these clues point to:

- A. TCM protective limiting due to heat
- B. A shattered rotor
- C. An out-of-phase driveshaft
- D. An over-adjusted wheel bearing

10. A bus is towed in dead and builds no transmission pressure while moving. Considering pump operation, this is explained by:

- A. The pump being engine-driven, so no pressure with the engine off
- B. A failed output speed sensor
- C. A stuck valve body
- D. A plugged breather

11. A whine is present in neutral with the engine running and rises with engine speed. Considering where it tracks, this points to:

- A. A wheel bearing
- B. The pump or converter/input components
- C. The differential side gears

D. The driveshaft center bearing

12. A solenoid tests within resistance spec, but its clutch circuit still fails to apply. Considering both facts, the BEST next step is:

A. Replace the TCM

B. Re-phase the driveshaft

C. Adjust the wheel bearings

D. Perform a hydraulic pressure test of that circuit

13. A bus complains of slipping and overheating, and the technician finds a heavily clogged filter. Together, these point to:

A. Excessive line pressure

B. Coolant contamination

C. Driveshaft vibration

D. A starved pump and low system pressure

14. A bus overheats during heavy retarder use on long downgrades. Considering the shared system, the FIRST area to evaluate is:

A. The driveshaft phasing

B. Fluid level/condition and cooling system capacity

C. The ring and pinion backlash

D. The wheel seals

15. A bus shows an engine flare during the 3-4 upshift with no lasting slip, and on-coming clutch pressure reads low. Together, these indicate:

A. Low on-coming pressure or early off-going release

- B. Excessively high apply pressure
- C. A worn wheel bearing
- D. A plugged breather

16. A scan tool shows an active code and a stored code on unrelated circuits. Considering both, the technician should:

- A. Diagnose the stored code first
- B. Clear both without diagnosis
- C. Diagnose the active code first
- D. Ignore both

17. A bus shudders at a steady 45 mph during lockup, and fluid condition is confirmed good. Together, these point to:

- A. The pinion preload
- B. The lockup clutch and its control circuit
- C. The differential side gears
- D. The slip yoke splines

18. Live data on an older bus shows large adaptive compensation along with a worsening soft shift. Together, these indicate:

- A. Advancing clutch wear or a developing fault
- B. A plugged breather
- C. An out-of-balance driveshaft
- D. A worn wheel seal

19. A technician is about to mate the transmission to the engine during installation. Considering the most damaging possible error, the critical check is:

- A. The driveshaft balance
- B. The wheel bearing adjustment
- C. The torque converter is fully seated
- D. The axle breather

20. A bus is found low on fluid with milky color and no external leak. Considering both clues, the fluid is being lost:

- A. Past the U-joints
- B. Out the breather
- C. Through a loose drain plug only
- D. Into the cooling system through a failed cooler

21. A driver reports a vibration at a specific road speed regardless of gear. Considering where it tracks, the technician should investigate:

- A. The transmission valve body
- B. The driveshaft or drive axle
- C. The torque converter stator
- D. The lockup clutch solenoid

22. A driveshaft vibrates immediately after a U-joint replacement, and runout and the new joints check good. Together, these point to:

- A. A worn wheel bearing
- B. The shaft reassembled out of phase
- C. Excessive backlash
- D. A slipping converter

23. A two-piece driveshaft has noise at certain speeds and shows play at the mid-shaft support. Together, these indicate:

- A. Low transmission fluid
- B. Incorrect pinion depth
- C. A slipping converter
- D. A worn center support bearing or its mount

24. A U-joint on a shaft with a near-zero working angle is found with brinelled bearings. Considering the geometry, the cause is:

- A. An excessive angle
- B. Over-lubrication
- C. Reversed phasing
- D. Bearings not rotating enough, denting under load

25. Before balancing a driveshaft to cure a vibration, the technician confirms several items. The correct prerequisite is to confirm that:

- A. New balance weights are added
- B. Phasing, angles, joints, bearing, slip yoke, and runout are correct
- C. The differential is refilled
- D. The cooler is flushed

26. A bus drive axle is noisy on acceleration but quiet on coast. Considering when the noise occurs, the source is:

- A. The coast side of the ring and pinion
- B. The drive side of the ring and pinion mesh
- C. A wheel bearing

D. The torque converter

27. A bus produces axle noise only when cornering. Considering when it occurs, the source is:

A. The differential side and spider gears

B. The drive side of the ring and pinion

C. A straight-line wheel bearing

D. The lockup clutch

28. A ring and pinion contact pattern is biased toward the tooth flank/root. Considering what the pattern shows, the pinion is:

A. Set too shallow

B. Correctly set

C. Set too deep, needing shim correction

D. Unaffected by depth

29. An axle seal leak recurs a week after replacement. Considering what was likely missed, the technician overlooked:

A. Resetting the adaptives

B. Adjusting backlash

C. Inspecting and clearing the housing breather

D. Replacing the driveshaft

30. A technician sets pinion preload on a crush-sleeve axle. Considering correct method, the technician should:

A. Tighten the nut as hard as possible

- B. Set preload by feel
- C. Skip preload if backlash is correct
- D. Measure rotating torque to spec without over-crushing the sleeve

31. A wheel seal leaks lubricant onto the brake assembly. Considering the safety implication, the correct action is to:

- A. Top off and release the bus
- B. Correct the leak and inspect the brakes for contamination before release
- C. Reset the adaptives
- D. Re-phase the driveshaft

32. A cyclic noise rises and falls with wheel speed and is louder on the right side. Considering where it tracks, the source is:

- A. A wheel bearing or axle shaft at the right wheel end
- B. The differential spider gears on turns
- C. The torque converter
- D. The transmission valve body

33. During final-drive setup, backlash is within spec but the contact pattern is off-center. Considering both findings, the conclusion is:

- A. The correct backlash makes the pattern irrelevant
- B. The adaptives need resetting
- C. The cooler is restricted
- D. Pinion depth is likely incorrect and needs shim correction

34. A bus drive axle runs hot and the lubricant level reads low. Considering both clues, the technician recognizes that low hypoid lubricant:

- A. Improves cooling
- B. Causes overheating and accelerated gear and bearing wear
- C. Raises line pressure
- D. Re-phases the driveshaft

35. A technician selecting lubricant for a hypoid drive axle must use:

- A. General automatic transmission fluid
- B. An extreme-pressure (EP) hypoid gear lubricant
- C. Engine oil
- D. A non-EP universal oil

36. A full-floating axle is being inspected. Considering its design, vehicle weight is carried by:

- A. The axle shaft
- B. The differential
- C. The wheel bearings on the housing
- D. The slip yoke

37. A drive axle lubricant sample contains visible metal particles. Considering what this indicates, the technician should suspect:

- A. Internal gear or bearing wear
- B. Normal operation
- C. A coolant leak
- D. A driveshaft phasing error

38. A bus produces axle noise on deceleration/coast but not on acceleration. Considering when it occurs, the source is:

- A. The coast side of the ring and pinion mesh
- B. The drive side of the ring and pinion
- C. A wheel bearing in turns
- D. The torque converter

39. A drive axle exhibits noise on both acceleration and coast that is steady with speed. Considering both conditions, the source is likely:

- A. The differential spider gears only
- B. A single wheel bearing only
- C. The slip yoke
- D. Worn ring and pinion, pinion bearings, or incorrect setup

40. A vibration tracks engine speed rather than road speed and is present in neutral. Considering where it tracks, the technician should investigate:

- A. The drive axle
- B. The differential side gears
- C. The wheel bearings
- D. The engine, converter, or input components

## **+ Answer Key & Full Answer Explanations**

1. C — Poor acceleration with good fluid and an above-spec stall reading together point to slipping clutches or low apply pressure. The engine does not over-produce power, a seized stator lowers stall, and a locked converter would not raise it. High stall with good fluid indicates slippage.

2. C — Highway-only overheating with no lockup achieved together point to the lockup clutch and its control circuit, since continuous slip generates heat. Differential lube, a wheel seal, and the slip yoke are unrelated. The missing lockup is the lead.

3. D — Low milky fluid with no external leak plus dropping coolant together indicate an internally failed fluid-to-coolant cooler allowing the fluids to mix. A phasing error, worn ring and pinion, or over-adjusted bearing would not mix coolant and fluid. The shared cooler is the path.
  
4. C — Slipping under load when warm with correct-level but dark, burnt fluid together indicate degraded fluid with likely clutch wear, and the heat source must be found. It is not normal, a phasing error, or a bearing issue. Address the cause of the heat.
  
5. C — Normal overall line pressure with one low clutch circuit together indicate a leak in that specific clutch circuit. A worn pump, faulty regulator, or low fluid would lower pressure system-wide. The single-circuit pattern isolates the fault.
  
6. A — Poor shifting after a mechanically correct overhaul, with the internal work confirmed right, together point to adaptives not reset and relearned. A differential refill, driveshaft replacement, or clogged breather are unrelated. The TCM keeps applying old compensation until reset.
  
7. A — An engine that stalls when stopping in gear points to a lockup clutch failing to release, mechanically holding the engine to the transmission. A freewheeling stator is normal, slightly high fluid would not stall the engine, and a disconnected impeller would prevent drive. A stuck-applied lockup clutch stalls the engine.
  
8. C — A harsh upshift with good fluid, no codes, and high apply pressure together indicate a pressure control fault commanding excessive pressure. An early off-going release causes flare, and the converter and breather are unrelated. High apply pressure produces abrupt engagement.
  
9. A — Weak retarding with high fluid temperature together point to TCM protective limiting due to heat. A shattered rotor, out-of-phase shaft, or over-adjusted bearing are not indicated. Protective limiting is commonly mistaken for failure.
  
10. A — No pressure while moving a dead bus is explained by the pump being engine-driven, so no pressure with the engine off. A speed sensor, valve body, or breather fault would not eliminate all pressure. Engine-off means no pump flow.

11. B — A whine in neutral with the engine running that rises with engine speed points to the pump or converter/input components, which turn with the engine regardless of gear. Wheel bearings, side gears, and the center bearing track road or shaft speed. The engine-speed relationship localizes it upstream.

12. D — A solenoid within resistance spec but with a non-applying circuit calls for a hydraulic pressure test of that circuit to find a stuck valve or leak. Replacing the TCM, re-phasing, or adjusting bearings do not address it. Electrical and hydraulic testing complement each other.

13. D — Slipping and overheating with a heavily clogged filter together point to a starved pump and low system pressure. The filter does not raise pressure, cause coolant contamination, or create driveshaft vibration. A clogged filter mimics internal faults.

14. B — Overheating during heavy retarder use on downgrades should first prompt evaluation of fluid level/condition and cooling system capacity, since the retarder shares that system. Driveshaft phasing, backlash, and wheel seals are unrelated to retarder heat. Fluid and cooling come first.

15. A — A flare with no lasting slip and low on-coming clutch pressure together indicate low on-coming pressure or an early off-going release. High pressure causes harshness, and the bearing and breather are unrelated. Flare is a timing or low-pressure handoff problem.

16. C — With one active and one stored code on unrelated circuits, the active code is diagnosed first because the fault is present now. The stored code may be intermittent, and ignoring or clearing both abandons diagnosis. Active faults take priority.

17. B — Shudder at steady speed during lockup with good fluid together point to the lockup clutch and its control circuit. Pinion preload, side gears, and slip yoke splines are unrelated to lockup. Shudder localized to lockup directs diagnosis there.

18. A — Large adaptive compensation with a worsening soft shift on an older bus together indicate advancing clutch wear or a developing fault. A plugged breather, out-of-balance driveshaft, or worn wheel seal are unrelated. Extreme adaptives are a clue to internal condition.

19. C — The critical pre-mating check, considering the most damaging error, is that the torque converter is fully seated, or the pump is destroyed on start-up. Driveshaft balance, wheel bearings, and the breather are unrelated. Full seating must be verified before mating.

20. D — Low fluid with milky color and no external leak together indicate the fluid is being lost into the cooling system through a failed cooler. The U-joints, breather, and a drain plug would not produce milky fluid. Hidden loss plus milky color points to the cooler.

21. B — Vibration at a specific road speed regardless of gear points to the driveshaft or drive axle. The valve body, stator, and lockup solenoid are transmission components. The speed relationship localizes it downstream.

22. B — Vibration immediately after a U-joint replacement, with runout and joints good, points to the shaft reassembled out of phase. A wheel bearing, backlash, or slipping converter would not appear specifically after that service. Restoring correct phase is the fix.

23. D — Noise at certain speeds with play at the mid-shaft support together indicate a worn center support bearing or its mount. Low fluid, pinion depth, and a slipping converter are unrelated to a mid-shaft fault. The location of the play identifies the component.

24. D — Brinelled bearings on a U-joint at a near-zero working angle are caused by the bearings not rotating enough and denting under load. An excessive angle, over-lubrication, and reversed phasing are not the cause. Too little angle causes brinelling.

25. B — Before balancing, the technician must confirm phasing, angles, joints, bearing, slip yoke, and runout are correct, because balancing cannot fix those faults. New weights, a differential refill, or a cooler flush are unrelated. Balance is the last step.

26. B — Noise on acceleration but quiet on coast points to the drive side of the ring and pinion mesh, loaded under power. The coast side loads on deceleration, a wheel bearing gives cyclic noise, and the converter is a transmission component. Drive-versus-coast isolates the loaded side.

27. A — Axle noise only when cornering points to the differential side and spider gears, which rotate relative to each other only in turns. The drive side, a straight-line wheel bearing, and the lockup clutch are not turn-specific. Turn-only noise isolates the differential internals.

28. C — A pattern biased toward the flank/root indicates the pinion is set too deep, needing shim correction. It is not too shallow, correctly set, or unaffected by depth. The pattern location reveals the depth error.

29. C — A seal leak recurring a week after replacement points to the housing breather not being inspected and cleared; a plug forces lubricant past the new seal. Resetting adaptives, adjusting backlash, or replacing the driveshaft are unrelated. Always check the breather.

30. D — On a crush-sleeve axle, pinion preload is set by measuring rotating torque to spec without over-crushing the sleeve. Tightening as hard as possible ruins the sleeve, feel is inaccurate, and skipping it is wrong. Measured preload prevents looseness and overload.

31. B — A seal leaking onto the brake assembly requires correcting the leak and inspecting the brakes for contamination before release, since contaminated linings reduce braking. Topping off, resetting adaptives, or re-phasing ignore the safety hazard. Brake contamination is urgent.

32. A — A cyclic noise that rises and falls with wheel speed and is louder on one side points to a wheel bearing or axle shaft at that wheel end. Spider gears act on turns, and the converter and valve body are transmission components. One-sided wheel-speed-cyclic noise localizes there.

33. D — Backlash within spec but an off-center contact pattern indicate pinion depth is likely incorrect and needs shim correction. Correct backlash does not make the pattern irrelevant, and adaptives and the cooler are unrelated. The pattern confirms depth.

34. B — A hot axle with low lubricant together indicate that low hypoid lubricant causes overheating and accelerated gear and bearing wear. It does not improve cooling, raise line pressure, or re-phase the driveshaft. Correct level is essential to durability.

35. B — A hypoid drive axle requires an extreme-pressure (EP) hypoid gear lubricant to withstand the sliding tooth action. ATF, engine oil, and non-EP universal oil cannot handle that load. The EP requirement follows from hypoid geometry.

36. C — On a full-floating axle, vehicle weight is carried by the wheel bearings on the housing while the shaft transmits torque. The axle shaft, differential, and slip yoke do not carry the weight. Load and torque follow separate paths.

37. A — Visible metal particles in axle lubricant most likely indicate internal gear or bearing wear. It is not normal, a coolant leak, or a phasing error. Metal contamination warns of internal damage.

38. A — Noise on deceleration/coast but not acceleration points to the coast side of the ring and pinion mesh, loaded on deceleration. The drive side loads under power, a wheel bearing acts in turns is incorrect, and the converter is a transmission component. The coast side carries the load on deceleration.

39. D — Noise on both acceleration and coast that is steady with speed points to worn ring and pinion, pinion bearings, or incorrect setup. Spider gears act on turns, a single wheel bearing gives one-sided cyclic noise, and the slip yoke is unrelated. Noise on both sides indicates broad wear or setup error.

40. D — Vibration that tracks engine speed rather than road speed and is present in neutral points to the engine, converter, or input components, which turn with the engine. The drive axle, differential gears, and wheel bearings track road or shaft speed. The engine-speed relationship localizes it upstream.