PRACTICE EXAM 12 — QUESTIONS 1–40

1. The torque converter element that redirects returning fluid to produce torque multiplication at low speed is the:

A. Impeller

B. Stator

C. Turbine

D. Lockup clutch

2. A transit bus accelerates poorly from a stop, fluid is good, and stall speed is above specification. The MOST likely cause is:

A. A seized stator

B. Slipping clutches or low apply pressure

C. The engine over-producing power

D. A locked converter

3. Technician A says planetary gears stay in mesh while members are held or driven. Technician B says the gearset slides gears to change ratio. Who is correct?

A. Technician A only

B. Technician B only

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

4. Each of the following can cause a transmission to overheat EXCEPT:

A. Continuous converter slip

B. A restricted cooler

C. A correctly applied lockup clutch at cruise

D. An incorrect fluid level causing aeration

5. A clutch-to-clutch upshift produces an engine flare with no lasting slip. The MOST likely cause is:

A. Excessively high apply pressure

B. A plugged axle breather

C. A worn wheel bearing

D. The off-going clutch releasing before the on-coming applies

6. Which step is the FIRST priority in diagnosing any transmission complaint?

A. Verifying the complaint with a road test

B. Removing the transmission

C. Replacing the valve body

D. Flushing the cooler

7. The TCM detects clutch slip primarily by comparing:

A. Coolant temperature to ambient

B. Battery voltage to alternator output

C. Input (turbine) speed to output speed

D. Fuel pressure to barometric pressure

8. A transmission reads low pressure in all circuits during testing. This points to:

A. A single worn clutch seal

B. A system-wide cause such as a worn pump or faulty regulator

C. An out-of-phase driveshaft

D. A plugged axle breather

9. Technician A says a code names the exact failed part. Technician B says a code identifies a circuit to diagnose. Who is correct?

A. Technician A only

B. Both Technician A and Technician B

C. Neither Technician A nor Technician B

D. Technician B only

10. A transmission shifts poorly after a mechanically correct internal repair. The MOST likely overlooked step is:

A. Replacing the driveshaft

B. Refilling the differential

C. Resetting and relearning adaptive values

D. Clearing the axle breather

11. Which fluid is required in a heavy-duty transit automatic transmission?

A. Any universal ATF

B. Engine oil

C. A fluid carrying the correct TES approval

D. EP hypoid gear lubricant

12. A stall speed below specification MOST likely indicates:

A. The engine not producing full power or a stator one-way clutch problem

B. Clutch slippage under load

C. An overfilled transmission

D. A locked converter at idle

13. Each of the following is a TCM sensor input EXCEPT:

A. Input speed

B. Differential backlash

C. Output speed

D. Fluid temperature

14. A bus overheats only at sustained highway speed, and data shows the converter never achieving lockup. The focus should be:

A. The differential lubricant

B. The lockup clutch and its control circuit

C. The wheel seals

D. The driveshaft slip yoke

15. Technician A says low apply pressure causes slipping. Technician B says high apply pressure causes harshness. Who is correct?

A. Technician A only

B. Technician B only

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

16. A solenoid tests electrically good but its clutch circuit still misbehaves. The BEST next step is:

A. Perform a hydraulic pressure test of that circuit

B. Replace the TCM

C. Re-phase the driveshaft

D. Adjust the wheel bearings

17. Milky transmission fluid combined with coolant loss BEST indicates:

A. A driveshaft phasing error

B. A worn ring and pinion

C. An over-adjusted wheel bearing

D. An internally failed fluid-to-coolant cooler

18. A restricted transmission filter would MOST likely cause:

A. Higher line pressure

B. Low pressure, slipping, and overheating

C. Improved shift quality

D. Coolant contamination

19. Before mating the transmission to the engine, the technician must verify:

A. The driveshaft is balanced

B. The axle breather is clear

C. The wheel bearings are adjusted

D. The torque converter is fully seated

20. A bus with an integral retarder shows weak retarding and high fluid temperature. The MOST likely explanation is:

A. The TCM is limiting retarding to prevent overheating

B. The rotor has shattered

C. The driveshaft is out of phase

D. A wheel bearing is over-adjusted

21. Technician A says the retarder replaces the service brakes. Technician B says the retarder supplements them. Who is correct?

A. Technician A only

B. Technician B only

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

22. A planetary gearset produces direct drive (1:1) when:

A. The ring gear is held

B. The carrier is held

C. The sun gear is held

D. Any two members are locked together

23. Adaptive learning primarily functions to:

A. Control engine fuel injection

B. Adjust clutch apply timing and pressure as components wear

C. Increase the differential ratio

D. Lock the converter at idle

24. A bus is towed in dead with no transmission pressure while moving. This is because:

A. The output speed sensor failed

B. The valve body is stuck

C. The pump is engine-driven and makes no pressure with the engine off

D. The breather is plugged

25. An active code and a stored code appear on unrelated circuits. The technician should:

A. Diagnose the stored code first

B. Clear both without diagnosis

C. Ignore both

D. Diagnose the active code first

26. Each of the following is a correct in-vehicle inspection point EXCEPT:

A. Transmission mounts

B. Wiring connectors and grounds

C. Internal clutch piston seals

D. Cooler lines

27. A whine present in neutral with the engine running that rises with engine speed points to:

A. The wheel bearings

B. The differential side gears

C. The pump or converter/input components

D. The driveshaft center bearing

28. Before condemning a transmission for a shift complaint, good practice is to:

A. Remove it immediately

B. Exhaust in-vehicle inspection and adjustment first

C. Replace the differential

D. Re-phase the driveshaft

29. Technician A says driveshaft end yokes must be in phase to cancel velocity fluctuation. Technician B says phasing only affects shaft length. 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

30. A U-joint operating at a near-zero working angle is MOST likely to suffer:

A. Brinelling from insufficient bearing rotation

B. Excessive lubrication

C. Improved phasing

D. Reduced shaft speed

31. Each of the following can cause driveshaft vibration EXCEPT:

A. Worn U-joints

B. An out-of-phase assembly

C. A shaft with correct phasing, sound joints, and runout in spec

D. A worn center support bearing

32. Before balancing a driveshaft to cure vibration, the technician must FIRST confirm:

A. The adaptives are reset

B. The differential is refilled

C. The cooler is flushed

D. Phasing, angles, joints, bearing, slip yoke, and runout are correct

33. A single-reduction drive axle turns power 90 degrees and provides final reduction through the:

A. Hypoid ring and pinion

B. Slip yoke

C. Output speed sensor

D. Differential spider gears alone

34. Backlash in a ring and pinion is BEST defined as:

A. The bearing load on the pinion

B. The lubricant level

C. The internal housing pressure

D. The clearance between the meshing teeth

35. Technician A says pinion preload may be set by feel. Technician B says preload is the same as backlash. Who is correct?

A. Technician A only

B. Technician B only

C. Both Technician A and Technician B

D. Neither Technician A nor Technician B

36. A drive axle is noisy on acceleration but quiet on coast. The source is:

A. The coast side of the ring and pinion

B. A wheel bearing

C. The drive side of the ring and pinion mesh

D. The torque converter

37. An axle seal leak recurs shortly after replacement. The technician most likely overlooked:

A. Inspecting and clearing the housing breather

B. Resetting the transmission adaptives

C. Adjusting the ring and pinion backlash

D. Replacing the driveshaft

38. A wheel seal leaking lubricant onto the brakes should be addressed by:

A. Correcting the leak and inspecting the brakes for contamination before release

B. Topping off and releasing the bus

C. Resetting the adaptives

D. Re-phasing the driveshaft

39. A hypoid drive axle requires extreme-pressure (EP) lubricant because of:

A. The low operating temperature

B. The sensor electrical load

C. The housing air pressure

D. The sliding tooth action of the offset gears

40. During final-drive setup, backlash is within specification but the contact pattern is off-center. The BEST conclusion is:

A. Pinion depth is likely incorrect and needs shim correction

B. Correct backlash makes the pattern irrelevant

C. The adaptives need resetting

D. The cooler is restricted

Answer Key & Full Answer Explanations

1. B — The stator redirects fluid returning from the turbine back into the impeller, producing torque multiplication at low speed. The impeller is engine-driven, the turbine drives the input, and the lockup clutch links the engine mechanically. The stator is the multiplication element.

2. B — Poor acceleration with good fluid and a stall speed above specification points to slipping clutches or low apply pressure. A seized stator lowers stall speed, the engine does not over-produce power, and a locked converter does not raise stall. High stall indicates slippage.

3. A — Technician A is correct: planetary gears stay in mesh while members are held or driven. Technician B describes a manual transmission's sliding gears. Constant mesh enables shifting under load.

4. C — A correctly applied lockup clutch at cruise reduces heat, so it is the exception. Continuous slip, a restricted cooler, and aeration from incorrect level all cause overheating. Lockup is part of the cure.

5. D — A flare with no lasting slip indicates the off-going clutch releasing before the on-coming applies. High pressure causes harshness, and the breather and bearing are unrelated. Flare is a timing handoff problem.

6. A — Verifying the complaint with a road test is the first priority, since you cannot diagnose what you have not confirmed. Removal, valve body replacement, and cooler flushing skip ahead. Verification anchors the process.

7. C — The TCM compares input (turbine) speed to output speed to detect slip, since a gear holds a fixed ratio between them. Coolant, battery, and fuel comparisons are unrelated. This comparison is the basis of slip detection.

8. B — Low pressure in all circuits points to a system-wide cause such as a worn pump or faulty regulator. A single clutch seal would affect one circuit, and driveshaft and breather faults are unrelated. The pattern distinguishes system-wide from circuit-specific faults.

9. D — Technician B is correct: a code identifies a circuit to diagnose. Technician A is wrong; a code does not name the exact failed part. Diagnosing the circuit prevents wrong-part replacement.

10. C — Poor shifting after a mechanically correct repair most likely means resetting and relearning adaptive values was overlooked. Driveshaft, differential, and breather work are unrelated. The TCM keeps applying old compensation until reset.

11. C — A heavy-duty transit automatic requires a fluid carrying the correct TES approval. Universal ATF, engine oil, and hypoid gear lube are wrong and harmful. Fluid specification is a functional requirement.

12. A — A stall speed below specification indicates the engine not producing full power or a stator one-way clutch problem. Clutch slippage raises stall speed instead. Low stall points to engine or converter, not slipping clutches.

13. B — Differential backlash is an axle measurement, not a TCM input, so it is the exception. Input speed, output speed, and fluid temperature are genuine inputs. The TCM does not read axle gear clearance.

14. B — Highway-only overheating with no lockup achieved points to the lockup clutch and its control circuit, since continuous slip generates heat. Differential lube, wheel seals, and the slip yoke are unrelated. The missing lockup is the lead.

15. C — Both are correct: low apply pressure causes slipping and high apply pressure causes harshness. Pressure direction maps to shift feel. Both statements are accurate.

16. A — When a solenoid tests good but the circuit misbehaves, a hydraulic pressure test of that circuit confirms a stuck valve or leak. Replacing the TCM, re-phasing the driveshaft, or adjusting bearings do not address it. Electrical and hydraulic testing complement each other.

17. D — Milky fluid with coolant loss indicates 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.

18. B — A restricted filter starves the pump, causing low pressure, slipping, and overheating. It does not raise pressure, improve shifts, or contaminate with coolant. A clogged filter mimics internal faults.

19. D — Before mating to the engine, the torque converter must be verified fully seated, or the pump is destroyed on start-up. Driveshaft balance, breather, and wheel bearings are unrelated. Full seating is a critical pre-mating step.

20. A — Weak retarding with high fluid temperature most likely means the TCM is limiting retarding to prevent overheating. A shattered rotor, out-of-phase shaft, or over-adjusted bearing are not indicated. Protective heat limiting is commonly mistaken for failure.

21. B — Technician B is correct: the retarder supplements the service brakes. Technician A is wrong; it does not replace them. The service brakes remain primary.

22. D — Direct drive occurs when any two members are locked together so the set rotates as a unit at 1:1. Holding the ring, carrier, or sun gear produces reduction or reverse. Locked members eliminate relative gear motion.

23. B — Adaptive learning adjusts clutch apply timing and pressure as components wear. It does not control fuel injection, increase the differential ratio, or lock the converter at idle. Adaptives maintain shift quality over time.

24. C — No pressure while moving a dead bus is because the pump is engine-driven and makes 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.

25. D — 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 clearing or ignoring both abandons diagnosis. Active faults take priority.

26. C — Internal clutch piston seals require disassembly and are not an in-vehicle inspection point, so this is the exception. Mounts, connectors and grounds, and cooler lines are in-vehicle points. Internal seals are found by pressure testing.

27. C — 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.

28. B — Good practice is to exhaust in-vehicle inspection and adjustment before condemning the transmission, since inexpensive faults can mimic internal problems. Removing it, replacing the differential, or re-phasing the driveshaft are premature. Diagnosis earns the teardown.

29. B — Technician A is correct: end yokes must be in phase to cancel velocity fluctuation. Technician B is wrong; phasing affects rotational smoothness, not shaft length. The slip yoke handles length.

30. A — A near-zero working angle causes brinelling from insufficient bearing rotation. It does not cause excessive lubrication, improved phasing, or reduced shaft speed. Too little angle dents the bearings under load.

31. C — A shaft with correct phasing, sound joints, and runout in spec will not, by itself, vibrate, so it is the exception. Worn joints, out-of-phase assembly, and a worn center bearing all cause vibration. The exception describes a good shaft.

32. D — Before balancing, the technician must confirm phasing, angles, joints, bearing, slip yoke, and runout are correct, because balancing cannot fix those faults. Resetting adaptives, refilling the differential, or flushing the cooler are unrelated. Balance is the last step.

33. A — The hypoid ring and pinion turns power 90 degrees and provides final reduction. The slip yoke, speed sensor, and spider gears alone do not. The ring and pinion is where final reduction and direction change occur.

34. D — Backlash is the clearance between the meshing ring and pinion teeth. It is not bearing load (preload), lubricant level, or housing pressure. Backlash is set to specification with a dial indicator.

35. D — Neither is correct: preload must be measured, not set by feel, and it is not the same as backlash. Preload is bearing load measured as rotating torque; backlash is tooth clearance. Both statements are wrong.

36. C — Noise on acceleration but quiet on coast points to the drive side of the ring and pinion mesh, which loads 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.

37. A — A recurring seal leak shortly after replacement most likely means the housing breather was not 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.

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

39. D — A hypoid axle requires EP lubricant because of the sliding tooth action of the offset gears under high load. Low temperature, sensor load, and housing pressure are not the reason. The EP requirement follows from hypoid geometry.

40. A — Backlash within spec but an off-center contact pattern indicates 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 correct depth.