# PRACTICE EXAM 13 — QUESTIONS 1–40

1. If a torque converter fails to achieve lockup at highway speed, the most direct downstream effect on the transmission is:

A. Reduced line pressure in all circuits

B. A harsh 1-2 shift

C. Excessive ring and pinion backlash

D. Elevated fluid temperature from continuous slip

2. If the transmission fluid level is allowed to run low, the pump may draw air, and the resulting aeration most directly causes:

A. Increased line pressure

B. Improved shift quality

C. Foaming, pressure loss, slipping, and overheating

D. A driveshaft phasing error

3. If the off-going clutch releases before the on-coming clutch applies during a shift, the driver feels:

A. An engine RPM flare between gears

B. A harsh bind-up

C. A delayed neutral engagement only

D. Improved shift smoothness

4. If a fluid-to-coolant cooler fails internally, two consequences the technician may observe are:

A. Lower stall speed and firmer shifts

B. Increased backlash and driveshaft vibration

C. Higher line pressure and a locked converter

D. Overheating and milky, coolant-contaminated fluid

5. If a technician replaces internal clutches but does not reset the required adaptive values, the most likely result is:

A. A coolant leak

B. Poor shift quality despite a correct repair

C. Excessive ring and pinion backlash

D. A plugged axle breather

6. If a transmission filter becomes heavily restricted, the effect on the pump and system is:

A. Higher output and firmer shifts

B. No measurable effect

C. The pump is starved, lowering pressure and causing slip and overheating

D. Coolant contamination of the fluid

7. If the heavy use of an integral retarder adds significant heat to the transmission fluid, a marginal cooling system may respond with:

A. Overheating and TCM-limited retarder performance

B. Increased torque multiplication

C. A driveshaft phasing error

D. Higher differential backlash

8. If a pressure control solenoid commands apply pressure that is too high, the resulting shift behavior is:

A. A harsh, abrupt shift

B. A soft, slipping shift

C. An engine flare

D. A delayed engagement only

9. If a wheel or axle seal leaks lubricant onto the brake components, the most serious consequence is:

A. A driveshaft phasing error

B. Higher transmission line pressure

C. Reduced braking effectiveness from contaminated linings

D. A locked torque converter

10. If the axle housing breather becomes plugged, internal pressure builds as the unit heats, and the result is:

A. Increased gear ratio

B. Improved cooling

C. Higher backlash

D. Lubricant forced past the seals

11. If a driveshaft is reassembled with the end yokes out of phase, the consequence is:

A. A torsional vibration from added velocity fluctuations

B. Improved shaft balance

C. Reduced shaft length

D. A coolant leak

12. If a U-joint operates at a near-zero working angle, the bearings fail to rotate enough and the result is:

A. Excessive lubrication

B. Improved phasing accuracy

C. Reduced shaft speed

D. Brinelling of the bearings

13. If pinion bearing preload is set too tight on a drive axle, the most likely consequence is:

A. Excessive backlash

B. Bearing overheating and early failure

C. Improved gear life

D. A coolant leak

14. If pinion bearing preload is set too loose, the most likely consequence is:

A. The pinion moves under load, upsetting the mesh and causing noise

B. Bearing overheating

C. A locked differential

D. A driveshaft phasing error

15. If ring and pinion backlash is set too tight, the gears most likely respond with:

A. Excessive noise on coast only

B. Binding, overheating, and wear

C. Improved quietness

D. A coolant leak

16. If ring and pinion backlash is set too loose, the most likely result is:

A. Binding and overheating

B. Improved durability

C. Noise, especially on torque reversal, and accelerated wear

D. A locked converter

17. If a transit bus driver makes a harsh manual shift in a manual driveline, standing passengers are at risk — which is one reason transit buses use automatics. The most direct benefit of the automatic here is:

A. Lower transmission weight

B. Smoother shifts that improve passenger safety and comfort

C. Elimination of the cooling system

D. Higher stall speed

18. If a technician mates the transmission to the engine with the torque converter not fully seated, the most likely result on first start-up is:

A. A driveshaft phasing error

B. Pump and converter damage

C. Excessive backlash

D. A plugged breather

19. If the differential side and spider gears are worn, the noise is most likely heard:

A. When the bus is turning corners

B. Only at idle in neutral

C. Only during converter lockup

D. Only on straight highway cruising

20. If a transmission is overfilled, the rotating components churn the fluid, and the result is:

A. Increased line pressure only

B. Aeration and overheating

C. Improved shift quality

D. A driveshaft phasing error

21. If a speed-sensor circuit reports faulty data, the TCM acts on that bad data, which can cause:

A. A coolant leak

B. Increased backlash

C. A driveshaft phasing error

D. Improper shift scheduling or false slip indications

22. If a non-TES-approved fluid is used in a transit automatic, a likely consequence is:

A. Improved shift quality and longer life

B. Degraded shifts, accelerated wear, and possible warranty loss

C. Lower operating temperature

D. A driveshaft phasing error

23. If a center support bearing's rubber mount deteriorates on a two-piece driveshaft, the result is:

A. Increased line pressure

B. Noise and vibration, often at certain speeds

C. A coolant leak

D. Excessive backlash

24. If a technician balances a driveshaft that actually has a worn U-joint, the outcome is:

A. The vibration is permanently cured

B. The shaft length changes

C. The vibration persists because balancing cannot fix a worn joint

D. The adaptives reset automatically

25. If the converter lockup clutch fails to release at low speed, the engine is mechanically held to the transmission, and the result is:

A. Improved fuel economy

B. Reduced stall speed

C. The engine stalls as the bus stops

D. Excessive backlash

26. If a hypoid drive axle is filled with a non-EP lubricant, the sliding tooth action causes:

A. Improved gear quietness

B. Lower operating temperature

C. A locked converter

D. Gear and bearing damage from lubricant breakdown

27. If a transmission mount breaks, the transmission can move, and the downstream effects include:

A. Vibration and driveline angle changes

B. A coolant leak

C. Increased line pressure

D. Excessive backlash

28. If a technician sets pinion depth incorrectly, the tooth contact pattern will:

A. Remain perfectly centered

B. Have no relationship to depth

C. Be biased away from center, toward the face or flank

D. Indicate the correct fluid TES rating

29. If a slip yoke is reassembled with the splines indexed incorrectly, the consequence is:

A. The shaft cannot change length

B. The center bearing fails

C. Improved balance

D. The end yokes can be placed out of phase

30. If excessive driveshaft runout exists from a bent tube, the resulting vibration:

A. Is cured by adding balance weights

B. Affects only the U-joints

C. Cannot be corrected by balancing alone

D. Is unrelated to rotation

31. If the drive side of the ring and pinion mesh is worn, the noise is most likely heard:

A. On coast only

B. Only during cornering

C. Under acceleration

D. Only at idle

32. If the coast side of the ring and pinion mesh is worn, the noise is most likely heard:

A. Under acceleration

B. Only during cornering

C. Only at idle in neutral

D. On deceleration/coast

33. If a transmission is towed without the engine running, the pump produces no pressure, which is why:

A. The differential overheats

B. The driveshaft loses phase

C. An automatic cannot build pressure while towed

D. The backlash increases

34. If a clogged breather is not cleared when an axle seal is replaced, the most likely outcome is:

A. The new seal leaks again from internal pressure

B. The backlash increases

C. The converter locks up

D. The driveshaft loses phase

35. If the lubricant in a hypoid axle is found contaminated with metal particles, this most likely indicates:

A. Normal operation

B. A coolant leak

C. A driveshaft phasing error

D. Internal gear or bearing wear

36. If the input speed exceeds what the output speed and commanded gear allow, the data indicates:

A. A coolant leak

B. A driveshaft phasing error

C. Excessive backlash

D. A clutch slipping in that gear

37. If a transmission is run with degraded, burnt fluid, the most likely downstream effect on the clutches is:

A. Accelerated clutch wear and poor shift quality

B. Improved shift quality

C. Lower operating temperature

D. A driveshaft phasing error

38. If the engine produces less than full power during a stall test, the stall speed reading will most likely be:

A. Lower than specification

B. Higher than specification

C. Unchanged

D. Above the redline

39. If a driveline vibration tracks road/driveshaft speed independent of gear, it most likely originates in the:

A. Transmission valve body

B. Driveshaft or drive axle

C. Torque converter stator

D. Lockup clutch solenoid

40. If a technician confirms correct phasing, angles, joints, bearing, slip yoke, and runout but the shaft still vibrates at speed, the remaining likely cause is:

A. Excessive backlash

B. Driveshaft imbalance

C. A plugged breather

D. A slipping lockup clutch

## Answer Key & Full Answer Explanations

1. D — A converter that fails to achieve lockup keeps slipping at road speed, and that continuous slip generates heat, raising fluid temperature. It does not reduce line pressure, cause a harsh shift, or affect backlash. Slip-generated heat is the direct effect.

2. C — Low fluid lets the pump draw air, and the resulting aeration causes foaming, pressure loss, slipping, and overheating. It does not raise pressure or improve shifts, and driveshaft phase is unrelated. Aeration degrades the fluid's hydraulic and cooling function.

3. A — An early off-going clutch release produces an engine RPM flare between gears. A late release causes bind-up, and the other options are unrelated. Flare is the signature of that timing error.

4. D — An internally failed fluid-to-coolant cooler causes overheating and milky, coolant-contaminated fluid as the two fluids mix. The other pairings are unrelated to cooler failure. Milky fluid plus overheating points to the cooler.

5. B — Replacing clutches without resetting required adaptives leaves the TCM applying old compensation, causing poor shift quality despite a correct repair. It does not cause a coolant leak, backlash change, or breather plug. Resetting and relearning is the missed step.

6. C — A heavily restricted filter starves the pump, lowering pressure and causing slip and overheating. It does not raise output, have no effect, or contaminate with coolant. A clogged filter mimics internal faults through low pressure.

7. A — Heavy retarder use adds heat to the shared fluid, and a marginal cooling system responds with overheating and TCM-limited retarder performance. It does not increase multiplication, cause a phasing error, or change backlash. The retarder and transmission share the cooling system.

8. A — Apply pressure that is too high makes the clutches engage too abruptly, producing a harsh shift. Low pressure causes slipping, an early release causes flare, and high pressure does not delay engagement. High pressure equals abrupt engagement.

9. C — A seal leaking lubricant onto the brakes contaminates the linings and reduces braking effectiveness, the most serious consequence. It does not cause a phasing error, raise line pressure, or lock the converter. Brake contamination is a safety hazard.

10. D — A plugged breather builds internal pressure as the axle heats, forcing lubricant past the seals. It does not change the gear ratio, improve cooling, or raise backlash. Pressure-driven leakage is the result.

11. A — Out-of-phase end yokes make the joints' velocity fluctuations add instead of cancel, producing a torsional vibration. It does not improve balance, reduce length, or cause a coolant leak. Phasing exists to cancel fluctuation.

12. D — A near-zero working angle lets the needle bearings fail to rotate, denting (brinelling) the cross under load. It does not cause excessive lubrication, improve phasing, or reduce speed. Too little angle causes brinelling.

13. B — Pinion preload set too tight overloads the bearings, causing overheating and early failure. It does not increase backlash, improve gear life, or cause a coolant leak. Excessive preload overloads the bearings.

14. A — Preload set too loose lets the pinion move under load, upsetting the mesh and causing noise. It does not overheat the bearings, lock the differential, or affect phasing. Insufficient preload permits harmful movement.

15. B — Backlash set too tight gives insufficient tooth clearance, causing binding, overheating, and wear. It does not produce coast-only noise, improve quietness, or cause a coolant leak. Too little backlash binds the gears.

16. C — Backlash set too loose causes noise, especially on torque reversal, and accelerated wear. It does not bind, improve durability, or lock the converter. Excessive clearance produces clatter and wear.

17. B — The automatic's most direct benefit for standing passengers is smoother shifts that improve safety and comfort. It is not about weight, eliminating cooling, or stall speed. Smooth shifts protect standing riders.

18. B — Mating with the converter not fully seated causes pump and converter damage on first start-up. It does not cause a phasing error, backlash change, or breather plug. Full seating must be verified before mating.

19. A — Worn differential side and spider gears produce noise when the bus is turning corners, since those gears rotate relative to each other only then. They are not heard at idle, during lockup, or only on straight cruising. Turn noise isolates the differential internals.

20. B — Overfilling lets the rotating components churn the fluid, causing aeration and overheating. It does not merely raise pressure, improve shifts, or affect phasing. Both overfill and underfill cause aeration.

21. D — A speed sensor reporting faulty data leads the TCM to act on bad data, causing improper shift scheduling or false slip indications. It does not cause a coolant leak, backlash change, or phasing error. Garbage in produces garbage out.

22. B — Non-TES-approved fluid causes degraded shifts, accelerated wear, and possible warranty loss, because its friction and thermal properties are wrong. It does not improve shifts, lower temperature, or affect phasing. Fluid specification is a functional requirement.

23. B — A deteriorated center-support rubber mount causes noise and vibration, often at certain speeds. It does not raise line pressure, cause a coolant leak, or change backlash. The mount is a wear point on a two-piece shaft.

24. C — Balancing a shaft that has a worn U-joint leaves the vibration in place, because balancing cannot fix a worn joint. It does not cure the vibration, change length, or reset adaptives. The real cause must be corrected first.

25. C — A lockup clutch that fails to release at low speed mechanically holds the engine to the transmission, so the engine stalls as the bus stops. It does not improve economy, reduce stall speed, or affect backlash. A stuck-applied lockup clutch stalls the engine.

26. D — A non-EP lubricant cannot withstand the hypoid sliding tooth action, causing gear and bearing damage from lubricant breakdown. It does not improve quietness, lower temperature, or lock the converter. EP lubricant is mandatory for hypoid gears.

27. A — A broken transmission mount lets the transmission move, causing vibration and driveline angle changes. It does not cause a coolant leak, raise line pressure, or change backlash. Mounts are an easily overlooked vibration source.

28. C — Incorrect pinion depth biases the tooth contact pattern away from center, toward the face or flank. The pattern does not stay centered or lose its relationship to depth. The pattern reveals the depth error.

29. D — Incorrect slip yoke spline indexing can place the end yokes out of phase. It does not prevent length change, fail the center bearing, or improve balance. Correct indexing preserves phasing.

30. C — Excessive runout from a bent tube produces vibration that cannot be corrected by balancing alone, since the shaft does not rotate true. It is not cured by weights, limited to U-joints, or unrelated to rotation. A bent shaft must be replaced or straightened.

31. C — Wear on the drive side of the ring and pinion produces noise under acceleration, when that side is loaded. It is not heard on coast, only in cornering, or only at idle. The drive side loads under power.

32. D — Wear on the coast side of the ring and pinion produces noise on deceleration/coast, when that side is loaded. It is not heard under acceleration, only in cornering, or only at idle. The coast side loads on deceleration.

33. C — With the engine off during towing the pump produces no pressure, which is why an automatic cannot build pressure while towed. It does not overheat the differential, lose driveshaft phase, or change backlash. Engine-off means no pump flow.

34. A — Not clearing a clogged breather when replacing a seal lets internal pressure force lubricant past the new seal, so it leaks again. It does not increase backlash, lock the converter, or lose phase. The breather must be cleared.

35. D — Metal particles in hypoid lubricant most likely indicate internal gear or bearing wear. It is not normal, a coolant leak, or a phasing error. Metal contamination is a warning of internal damage.

36. D — Input speed exceeding what the output speed and commanded gear allow indicates a clutch slipping in that gear. It does not indicate a coolant leak, phasing error, or backlash. The ratio mismatch reveals slip.

37. A — Degraded, burnt fluid causes accelerated clutch wear and poor shift quality. It does not improve shifts, lower temperature, or affect phasing. Damaged fluid harms the clutches it is meant to protect.

38. A — If the engine produces less than full power during a stall test, the stall speed reads lower than specification, because the converter cannot load the engine to spec. It does not read higher, unchanged, or above redline. Low stall points to the engine or converter.

39. B — Vibration that tracks road/driveshaft speed independent of gear originates in the driveshaft or drive axle. The valve body, stator, and lockup solenoid are transmission components. The speed relationship localizes it downstream.

40. B — With phasing, angles, joints, bearing, slip yoke, and runout all confirmed good, a remaining vibration at speed points to driveshaft imbalance. It is not backlash, a breather, or a slipping lockup clutch. Imbalance is the diagnosis when all other causes are ruled out.