PRACTICE EXAM 19 — QUESTIONS 1–40

1. The torque converter allows a bus to sit stopped in gear with the engine running because:

A. The fluid coupling permits slip between the impeller and turbine

B. The lockup clutch is applied

C. The pump stops turning

D. The stator holds the turbine still

2. Torque multiplication in a converter occurs because the stator:

A. Locks the engine to the transmission

B. Stops the impeller

C. Seals the converter shell

D. Redirects returning fluid back into the impeller in the direction of rotation

3. An automatic can shift under load without interrupting power because:

A. It disengages the engine each shift

B. It uses a manual clutch

C. Its gears slide out of mesh

D. Its planetary gears stay in constant mesh while members are held or driven

4. A lockup clutch raises efficiency at cruise because it:

A. Increases torque multiplication

B. Eliminates the fluid slip between impeller and turbine

C. Lowers the stall speed

D. Allows idle while stopped

5. Continuous converter slip raises fluid temperature because:

A. The pump stops

B. The differential absorbs heat

C. The breather closes

D. Fluid friction within the slipping coupling generates heat

6. The regulator raises line pressure under heavy load so that:

A. The fluid cools

B. The converter unlocks

C. The breather vents

D. The clutches hold firmly without slipping under higher torque

7. The TCM can detect slip from speed data because, in a given gear:

A. The speeds are unrelated

B. Input and output speed hold a fixed ratio that slip disturbs

C. Output always exceeds input

D. Both are always equal

8. A solenoid that tests electrically good can still fail to apply a clutch because:

A. Its valve may be stuck or the circuit leaks hydraulically

B. The voltage is correct

C. The TCM commands it normally

D. The fluid is the correct type

9. TES-approved fluid is required because its engineered friction properties:

A. Increase the axle ratio

B. Make correct clutch-to-clutch shift behavior possible

C. Eliminate the cooler

D. Lower stall below idle

10. Underfilling causes overheating because the pump:

A. Over-pressurizes

B. Seals the breather

C. Draws air, aerating the fluid and reducing cooling

D. Applies the lockup clutch

11. A stall speed above spec indicates slippage because:

A. Something slips under load, letting engine RPM climb past spec

B. The engine exceeds rated power

C. The converter is locked

D. The stator has seized

12. A hydraulic retarder generates heat because it:

A. Applies friction pads

B. Runs a generator

C. Reverses the converter

D. Forces a rotor to churn fluid against a stator, absorbing energy

13. The TCM limits retarding when fluid is hot to:

A. Protect the transmission and fluid from overheating

B. Increase retarding

C. Lock the converter

D. Raise differential preload

14. A planetary set produces reverse when:

A. Two members are locked

B. The sun gear is driven and the carrier is held

C. The carrier is driven and the ring is output

D. All members freewheel

15. The pump produces no pressure with the engine off because it is:

A. Electrically driven

B. Driven by the converter and engine

C. Driven by the output shaft

D. Driven by the pinion

16. A freeze-frame snapshot helps with intermittent faults because it:

A. Repairs the circuit

B. Measures backlash

C. Records the conditions present when the code set

D. Resets the adaptives

17. A lockup clutch stuck applied stalls the engine at low speed because it:

A. Freewheels the stator

B. Stops the pump

C. Mechanically holds the engine to the transmission as the bus stops

D. Drains the converter

18. High apply pressure produces a harsh shift because the clutches:

A. Engage too abruptly

B. Slip excessively

C. Cannot lock

D. Cannot receive fluid

19. In-vehicle inspection precedes removal because:

A. Removal is always faster

B. Internal faults never occur

C. Inexpensive external faults can mimic internal problems

D. The converter must be replaced first

20. A restricted filter lowers pressure because it:

A. Increases pump output

B. Starves the pump of fluid flow

C. Over-cools the fluid

D. Seals the cooler

21. Adaptive reset is needed after certain repairs because:

A. It raises line pressure permanently

B. The old learned values no longer match the refreshed hardware

C. It changes the ratio

D. It cools the fluid

22. A non-locking converter at road speed overheats because:

A. The differential overheats first

B. The pump stops

C. The unlocked coupling keeps slipping, generating heat

D. The breather closes

23. Direct drive (1:1) results when:

A. The ring gear is held

B. The carrier is held

C. Any two members are locked together so the set rotates as a unit

D. The sun gear is held

24. The impeller is the element that:

A. Connects to the input shaft

B. Redirects fluid

C. Locks the engine

D. Is engine-driven and throws fluid toward the turbine

25. A planetary gearset delivers maximum forward reduction when:

A. Two members are locked

B. The carrier is driven and the ring is output

C. All members freewheel

D. The sun is driven, the ring is held, and the carrier is output

26. Correct driveshaft phasing produces smooth rotation because:

A. It changes shaft length

B. It removes the U-joints

C. Each joint's velocity fluctuation cancels the other's

D. It eliminates the slip yoke

27. A near-zero working angle causes brinelling because:

A. The needle bearings fail to rotate enough and dent under load

B. The angle increases shaft speed

C. The angle improves balance

D. The angle reduces lubrication need

28. Excessive runout causes vibration that balancing cannot cure because:

A. Balancing increases runout

B. The shaft does not rotate true, a geometric fault weights cannot offset

C. Runout only affects U-joints

D. Runout is unrelated to vibration

29. A slip yoke lets the driveshaft change length because:

A. It multiplies torque

B. It holds the ring gear

C. Its splined connection allows the shaft to extend and retract

D. It regulates line pressure

30. A single-reduction axle turns power 90 degrees and reduces it through the:

A. Slip yoke

B. Hypoid ring and pinion

C. Output speed sensor

D. Differential spider gears alone

31. The differential allows the wheels to turn at different speeds in a turn because:

A. The ring gear disengages

B. The pinion stops

C. The shafts lock together

D. The spider gears rotate to permit a speed difference between the side gears

32. A hypoid gearset requires EP lubricant because its offset gears produce:

A. Very low load

B. No tooth contact

C. A sliding action between the teeth under high load

D. Only rolling contact

33. Too little backlash binds the gears because:

A. There is insufficient clearance between the meshing teeth

B. The teeth never touch

C. The lubricant boils

D. The breather closes

34. Pinion preload is measured as rotating torque because:

A. It equals the gear ratio

B. That value reflects the controlled load on the bearings

C. It measures backlash

D. It indicates fluid level

35. A plugged breather causes seal leaks because:

A. Internal pressure builds and forces lubricant past the seals

B. It lowers the lubricant level

C. It increases backlash

D. It cools the transmission

36. On a full-floating axle, the shaft transmits torque but not weight because:

A. The wheel bearings on the housing carry the vehicle weight

B. The shaft is hollow

C. The differential carries the weight

D. The shaft is splined at both ends

37. Coast-side gear noise occurs on deceleration because:

A. The drive side loads on coast

B. The spider gears engage only on coast

C. The coast side of the teeth carries the load during deceleration

D. The wheel bearings load on coast

38. A tooth contact pattern reveals setup errors because it:

A. Shows where the pinion actually contacts the ring gear teeth

B. Measures line pressure

C. Reads TCM data

D. Checks the stall speed

39. A retarder shares the transmission's cooling system, so heavy retarder use:

A. Lowers fluid temperature

B. Improves shift quality

C. Re-phases the driveshaft

D. Increases thermal load on that system

40. A worn wheel bearing produces a cyclic noise tied to wheel speed because:

A. It engages only in turns

B. It loads only under power

C. It tracks engine speed

D. Its defect contacts the load once per rotation of that wheel

Answer Key & Full Answer Explanations

1. A — The fluid coupling permits slip between the impeller and turbine, so the bus can sit stopped in gear with the engine running. Lockup applied, a stopped pump, or a held turbine do not explain idle-in-gear. Converter slip enables idle while stopped.

2. D — The stator redirects returning fluid back into the impeller in the direction of rotation, producing torque multiplication. It does not lock the engine, stop the impeller, or seal the shell. Fluid redirection is the multiplication mechanism.

3. D — An automatic shifts under load without interrupting power because its planetary gears stay in constant mesh while members are held or driven. It does not disengage the engine, use a manual clutch, or slide gears. Constant mesh enables uninterrupted shifting.

4. B — The lockup clutch eliminates the fluid slip between impeller and turbine, raising efficiency at cruise. It does not increase multiplication, lower stall, or allow idle-while-stopped. Removing slip improves efficiency.

5. D — Continuous slip raises fluid temperature because fluid friction within the slipping coupling generates heat. The pump keeps running, the differential does not absorb transmission heat, and the breather is unrelated. Slip-generated heat is the cause.

6. D — The regulator raises line pressure under heavy load so the clutches hold firmly without slipping under higher torque. It does not cool fluid, unlock the converter, or vent the breather. Higher torque needs higher apply pressure.

7. B — In a given gear, input and output speed hold a fixed ratio that slip disturbs, which is how the TCM detects it. The speeds are not unrelated, output does not always exceed input, and they are equal only at 1:1. The fixed ratio enables slip detection.

8. A — A solenoid can test good yet fail to apply a clutch if its valve is stuck or the circuit leaks hydraulically. Correct voltage, normal command, and correct fluid do not cause the failure. Hydraulic testing complements electrical testing.

9. B — TES-approved fluid's engineered friction properties make correct clutch-to-clutch shift behavior possible. It does not increase the axle ratio, eliminate the cooler, or lower stall below idle. The friction characteristics are built into the specification.

10. C — Underfilling lets the pump draw air, aerating the fluid and reducing cooling, causing overheating. It does not over-pressurize, seal the breather, or apply the lockup clutch. Aeration degrades cooling and hydraulic function.

11. A — A stall speed above spec indicates something slips under load, letting engine RPM climb past spec. The engine does not exceed rated power, and a locked or seized condition would not raise stall. High stall means slippage.

12. D — A hydraulic retarder generates heat because it forces a rotor to churn fluid against a stator, absorbing energy. It does not use friction pads, a generator, or reverse the converter. The churning resistance converts vehicle energy to heat.

13. A — The TCM limits retarding when fluid is hot to protect the transmission and fluid from overheating. It does not increase retarding, lock the converter, or raise preload. Protective limiting prevents heat damage.

14. B — A planetary set produces reverse when the sun gear is driven and the carrier is held. Locking two members gives direct drive, and the other arrangements give forward results. Holding the carrier reverses output rotation.

15. B — The pump produces no pressure with the engine off because it is driven by the converter and engine. It is not electric, output-driven, or pinion-driven. Engine-off means no pump flow.

16. C — A freeze-frame snapshot records the conditions present when the code set, helping with intermittent faults. It does not repair the circuit, measure backlash, or reset adaptives. The snapshot reveals the conditions under which the fault appears.

17. C — A lockup clutch stuck applied mechanically holds the engine to the transmission as the bus stops, stalling the engine. A freewheeling stator, stopped pump, or drained converter do not cause it. A stuck-applied lockup clutch stalls the engine.

18. A — High apply pressure makes the clutches engage too abruptly, producing a harsh shift. It does not cause slip, prevent lockup, or block fluid. High pressure equals abrupt engagement.

19. C — In-vehicle inspection precedes removal because inexpensive external faults can mimic internal problems. Removal is not always faster, internal faults do occur, and the converter need not be replaced first. Diagnosis earns the teardown.

20. B — A restricted filter starves the pump of fluid flow, lowering pressure. It does not increase output, over-cool the fluid, or seal the cooler. A clogged filter mimics internal faults through low pressure.

21. B — Adaptive reset is needed after certain repairs because the old learned values no longer match the refreshed hardware. It does not permanently raise pressure, change the ratio, or cool the fluid. Resetting lets the TCM relearn for the current condition.

22. C — A non-locking converter at road speed overheats because the unlocked coupling keeps slipping, generating heat. The differential and breather are unrelated, and the pump keeps running. Continuous slip is the heat source.

23. C — Direct drive (1:1) results when any two members are locked together so the set rotates as a unit. Holding the ring, carrier, or sun gear produces reduction or reverse. Locked members eliminate relative gear motion.

24. D — The impeller is engine-driven and throws fluid toward the turbine. It does not connect to the input, redirect fluid, or lock the engine. The impeller is the engine-driven pump element.

25. D — Maximum forward reduction occurs when the sun is driven, the ring is held, and the carrier is output. Locking two members gives direct drive, and the other arrangements give different results. This configuration produces the greatest torque increase.

26. C — Correct phasing produces smooth rotation because each joint's velocity fluctuation cancels the other's. Phasing does not change length, remove U-joints, or eliminate the slip yoke. Canceling fluctuations is its purpose.

27. A — A near-zero working angle causes brinelling because the needle bearings fail to rotate enough and dent under load. The angle does not increase speed, improve balance, or reduce lubrication need. Too little angle dents the bearings.

28. B — Excessive runout causes vibration that balancing cannot cure because the shaft does not rotate true, a geometric fault weights cannot offset. Balancing does not increase runout, runout is not limited to U-joints, and it does cause vibration. A bent shaft must be corrected.

29. C — A slip yoke lets the shaft change length because its splined connection allows the shaft to extend and retract. It does not multiply torque, hold the ring gear, or regulate pressure. The slip joint handles length change.

30. B — A single-reduction axle turns power 90 degrees and reduces it through the hypoid ring and pinion. The slip yoke, speed sensor, and spider gears alone do not. The ring and pinion is the final drive gearset.

31. D — The spider gears rotate to permit a speed difference between the side gears, letting the wheels turn at different speeds in a turn. The ring gear does not disengage, the pinion keeps turning, and the shafts do not lock. Spider-gear rotation enables the difference.

32. C — A hypoid gearset's offset gears produce a sliding action between the teeth under high load, requiring EP lubricant. The load is not low, contact is not absent, and it is not pure rolling. The sliding action mandates EP lubricant.

33. A — Too little backlash binds the gears because there is insufficient clearance between the meshing teeth. The teeth do touch, and the cause is not boiling lubricant or the breather. Inadequate clearance causes binding.

34. B — Pinion preload is measured as rotating torque because that value reflects the controlled load on the bearings. It does not equal the gear ratio, measure backlash, or indicate fluid level. Rotating torque is the practical measure of preload.

35. A — A plugged breather builds internal pressure that forces lubricant past the seals. It does not lower the lubricant level, increase backlash, or cool the transmission. Pressure-driven leakage is the result.

36. A — On a full-floating axle the shaft transmits torque but not weight because the wheel bearings on the housing carry the vehicle weight. Being hollow or splined does not explain the load path, and the differential does not carry weight. The housing-mounted bearings bear the load.

37. C — Coast-side gear noise occurs on deceleration because the coast side of the teeth carries the load during deceleration. The drive side loads under power, spider gears act on turns, and wheel bearings give cyclic noise. The loaded tooth side identifies the source.

38. A — A tooth contact pattern reveals setup errors because it shows where the pinion actually contacts the ring gear teeth. It does not measure line pressure, read TCM data, or check stall speed. The pattern verifies depth and backlash.

39. D — Heavy retarder use increases thermal load on the shared cooling system, since the retarder dumps heat into the same fluid. It does not lower fluid temperature, improve shift quality, or re-phase the driveshaft. The retarder and transmission share the cooling system.

40. D — A worn wheel bearing produces a cyclic noise tied to wheel speed because its defect contacts the load once per rotation of that wheel. It does not engage only in turns, load only under power, or track engine speed. The per-rotation defect creates the cyclic, wheel-speed-linked noise.