

PRACTICE EXAM 14 — QUESTIONS 1-40

1. The term "stall speed" refers to the:

- A. Maximum engine RPM reached with the turbine held stationary at full throttle
- B. Idle speed of the engine in neutral
- C. Speed at which the converter locks up
- D. Output shaft speed at highway cruise

2. "Line pressure" is best defined as the:

- A. Main regulated system pressure produced by the pump and set by the regulator
- B. Pressure inside the cooling system
- C. Air pressure in the brake reservoir
- D. Pressure inside the axle housing

3. "Direct drive" in a planetary gearset means:

- A. Maximum torque reduction
- B. The set produces reverse
- C. Input speed equals output speed at a 1:1 ratio
- D. The gears are disengaged

4. The "impeller" in a torque converter is the element that is:

- A. Connected to the transmission input shaft
- B. Mounted on a one-way clutch

- C. The stationary fluid redirector
- D. Driven by the engine and throws fluid toward the turbine

5. "Clutch-to-clutch shifting" describes:

- A. Sliding gears in and out of mesh
- B. Releasing one clutch as another applies to change ratio
- C. Disconnecting the engine during shifts
- D. Locking the converter at idle

6. "Adaptive learning" in a transmission control module refers to:

- A. Increasing the differential gear ratio over time
- B. Controlling engine fuel injection
- C. Adjusting clutch apply timing and pressure to compensate for wear
- D. Locking the torque converter permanently

7. A "Diagnostic Trouble Code" (DTC) identifies:

- A. A circuit or condition the TCM has flagged
- B. The exact failed part to replace
- C. The fluid TES rating
- D. The differential backlash value

8. "Backlash," as applied to a ring and pinion, is:

- A. The bearing load on the pinion
- B. The lubricant volume in the housing

- C. The clearance between the meshing gear teeth
- D. The internal housing pressure

9. "Preload," as applied to a bearing, is:

- A. The clearance between gear teeth
- B. The lubricant level
- C. The housing air pressure
- D. A controlled, specified load placed on the bearing

10. "Runout" is best defined as the:

- A. Clearance between meshing teeth
- B. Load placed on a bearing
- C. Lubricant level in a component
- D. Deviation of a rotating part from true rotation

11. A "hypoid" gearset is one in which the:

- A. Pinion is offset from the ring gear centerline
- B. Pinion meets the ring gear exactly on its centerline
- C. Gears never touch
- D. Gears slide in and out of mesh

12. A "full-floating" axle is one in which the:

- A. Axle shaft carries the vehicle weight
- B. Differential supports the vehicle weight

- C. Wheel bearings on the housing carry the weight while the shaft transmits torque
- D. Shaft both carries weight and transmits torque

13. "Brinelling" of a U-joint bearing refers to:

- A. Excessive lubrication
- B. Correct rotational wear
- C. A phasing error
- D. Denting of the bearing surface from load without rotation

14. "Phasing," on a driveshaft with a U-joint at each end, means:

- A. The end yokes are aligned in the same plane
- B. The shaft can change length
- C. The center bearing is removed
- D. The slip yoke is lubricated

15. The "stator" in a torque converter is the element that:

- A. Is driven by the engine
- B. Connects to the transmission input
- C. Locks the engine to the transmission
- D. Redirects fluid to multiply torque at low speed

16. A "retarder" is best defined as a:

- A. Device that increases engine power
- B. Component that locks the converter

- C. Supplemental braking device that absorbs driveline energy
- D. Part that sets ring and pinion backlash

17. "End play," set during transmission assembly, is:

- A. Controlled axial movement of a shaft or assembly set to specification
- B. The clearance between ring and pinion teeth
- C. The bearing preload value
- D. The lubricant level

18. A "valve body" in an automatic transmission is the:

- A. Source of all hydraulic pressure
- B. Hydraulic control center that routes pressurized fluid
- C. Cooling heat exchanger
- D. Mechanical link between engine and transmission

19. The "turbine" in a torque converter is the element that:

- A. Is bolted to the converter cover
- B. Redirects returning fluid
- C. Sits on a one-way clutch
- D. Connects to the transmission input shaft

20. A "single-reduction" drive axle provides:

- A. No gear reduction
- B. Three stages of reduction

- C. Two stages of reduction
- D. One stage of gear reduction between driveshaft and wheels

21. "Lockup," referring to the torque converter, means the:

- A. Converter is producing maximum torque multiplication
- B. Engine is mechanically linked to the transmission, eliminating slip
- C. Pump has stopped turning
- D. Stator has seized

22. A "solenoid," in transmission control, is a device that:

- A. Produces hydraulic pressure
- B. Cools the fluid
- C. Converts an electrical command into hydraulic action
- D. Sets the gear ratio

23. The "differential" in a drive axle is the assembly that:

- A. Turns power 90 degrees only
- B. Splits torque to both wheels while allowing different wheel speeds
- C. Provides converter lockup
- D. Regulates line pressure

24. The "breather" (vent) on an axle housing functions to:

- A. Lubricate the wheel bearings
- B. Equalize internal pressure with atmosphere

- C. Increase the gear ratio
- D. Cool the transmission fluid

25. "Aeration" of transmission fluid refers to:

- A. The fluid reaching operating temperature
- B. The correct fluid level
- C. Air being drawn into or churned in the fluid
- D. The fluid TES rating

26. "TES," in the context of transit transmission fluid, refers to a:

- A. Transmission fluid performance specification standard
- B. Type of gear lubricant for axles
- C. Brand of cooler
- D. Diagnostic trouble code prefix

27. A "slip yoke" on a driveshaft is the component that:

- A. Multiplies torque
- B. Accommodates length change as the suspension moves
- C. Holds the ring gear
- D. Regulates line pressure

28. The "planet carrier" in a planetary gearset is the member that:

- A. Is the central gear
- B. Has internal teeth

- C. Holds the planet gears and rotates as a unit
- D. Is the outer ring

29. A "torque converter" is best described as a:

- A. Fluid coupling that connects engine to transmission and multiplies torque
- B. Mechanical clutch that fully connects the engine
- C. Gear-driven pump only
- D. Friction brake device

30. "Pinion depth," in a ring and pinion setup, is adjusted by:

- A. Adding fluid
- B. Tightening the breather
- C. Changing the driveshaft phase
- D. Shims behind the pinion

31. A "center support bearing" on a driveshaft is the component that:

- A. Supports the joint between sections of a two-piece shaft
- B. Multiplies torque
- C. Regulates pressure
- D. Sets the backlash

32. "Working angle," referring to a universal joint, is the:

- A. Alignment of the end yokes
- B. Angle through which the joint operates

- C. Lubricant level in the joint
- D. Bearing preload of the joint

33. The "tooth contact pattern" is used to:

- A. Measure line pressure
- B. Confirm correct pinion depth and backlash
- C. Read TCM data
- D. Check the converter stall speed

34. An "output retarder" is located:

- A. At or near the transmission output
- B. Inside the differential
- C. On the driveshaft slip yoke
- D. In the wheel end

35. A "freeze frame" (snapshot) is:

- A. A balance reading
- B. A backlash measurement
- C. A runout value
- D. The operating conditions recorded when a code set

36. The "ring gear" in a final drive is the:

- A. Central small gear driven by the driveshaft
- B. Large gear driven by the pinion and bolted to the differential case

- C. Bearing preload device
- D. Cooling component

37. A "lockup clutch" is the converter element that:

- A. Redirects fluid for multiplication
- B. Mechanically links the engine and transmission to eliminate slip
- C. Drives the pump
- D. Supports the turbine

38. "Extreme-pressure (EP) lubricant" is required in a hypoid axle because of the:

- A. Low operating temperature
- B. Electrical sensor load
- C. Sliding tooth action under high load
- D. Housing air pressure

39. The "pressure regulator valve" is the component that:

- A. Produces hydraulic pressure
- B. Cools the fluid
- C. Routes fluid to the clutches
- D. Establishes the main regulated line pressure

40. A "planetary gearset" is characterized by:

- A. Gears that slide in and out of mesh
- B. A single gear only

- C. Gears in constant mesh with sun, planets, carrier, and ring members
- D. No moving parts

Answer Key & Full Answer Explanations

1. A — Stall speed is the maximum engine RPM reached with the turbine held stationary at full throttle, compared to specification in a stall test. It is not idle speed, lockup speed, or cruise output speed. Stall speed evaluates converter and transmission condition.

2. A — Line pressure is the main regulated system pressure produced by the pump and set by the regulator valve. It is not cooling, brake, or axle pressure. Line pressure feeds all clutch apply circuits.

3. C — Direct drive means input speed equals output speed at a 1:1 ratio, with two members locked together. It is not maximum reduction, reverse, or disengagement. Direct drive produces no reduction or multiplication.

4. D — The impeller is driven by the engine and throws fluid toward the turbine. It is not connected to the input, mounted on a one-way clutch, or the stationary redirector. The impeller is the engine-driven pump element.

5. B — Clutch-to-clutch shifting describes releasing one clutch as another applies to change ratio. It is not sliding gears, disconnecting the engine, or locking the converter. Coordinated clutch handoff is the shift mechanism.

6. C — Adaptive learning adjusts clutch apply timing and pressure to compensate for wear. It does not increase the differential ratio, control fuel injection, or lock the converter. Adaptives maintain shift quality over time.

7. A — A DTC identifies a circuit or condition the TCM has flagged, not the exact failed part. It is not a fluid rating or a backlash value. The circuit must be diagnosed before replacing parts.

8. C — Backlash is the clearance between the meshing ring and pinion teeth. It is not bearing load, lubricant volume, or housing pressure. Backlash is set with a dial indicator to specification.

9. D — Preload is a controlled, specified load placed on a bearing to eliminate looseness. It is not tooth clearance, lubricant level, or housing pressure. Preload is measured as rotating torque.

10. D — Runout is the deviation of a rotating part from true rotation, measured with a dial indicator. It is not tooth clearance, bearing load, or lubricant level. Excessive runout causes vibration.

11. A — A hypoid gearset has the pinion offset from the ring gear centerline. It does not meet on the centerline, avoid contact, or slide. The offset gives strength and quiet operation while creating a sliding tooth action.

12. C — A full-floating axle has the wheel bearings on the housing carrying the weight while the shaft transmits torque. The shaft does not carry weight, and the differential does not support the bus. Load and torque follow separate paths.

13. D — Brinelling is denting of the bearing surface from load without rotation. It is not excessive lubrication, normal wear, or a phasing error. A near-zero working angle causes brinelling.

14. A — Phasing means the end yokes are aligned in the same plane. It does not refer to length change, removing the center bearing, or lubricating the slip yoke. Correct phasing cancels velocity fluctuation.

15. D — The stator redirects fluid to multiply torque at low speed. It is not engine-driven, connected to the input, or the lockup element. The stator enables torque multiplication.

16. C — A retarder is a supplemental braking device that absorbs driveline energy. It does not increase engine power, lock the converter, or set backlash. The retarder spares the service brakes.

17. A — End play is controlled axial movement of a shaft or assembly set to specification. It is not tooth clearance, preload, or lubricant level. End play is set with selective components.

18. B — The valve body is the hydraulic control center that routes pressurized fluid. The pump is the pressure source, the cooler removes heat, and the converter is the mechanical/fluid link. The valve body directs flow.

19. D — The turbine connects to the transmission input shaft. It is not bolted to the cover, redirecting fluid, or on a one-way clutch. The turbine transfers motion into the transmission.

20. D — A single-reduction axle provides one stage of gear reduction between driveshaft and wheels. It is not zero, two, or three stages. "Single" distinguishes it from double-reduction or two-speed axles.

21. B — Lockup means the engine is mechanically linked to the transmission, eliminating slip. It is not maximum multiplication, a stopped pump, or a seized stator. Lockup improves efficiency at cruise.

22. C — A solenoid converts an electrical command into hydraulic action. It does not produce pressure, cool fluid, or set the gear ratio. Solenoids are the TCM's output devices.

23. B — The differential splits torque to both wheels while allowing different wheel speeds. It does not only turn power 90 degrees, provide lockup, or regulate line pressure. The differential enables the wheel-speed difference in turns.

24. B — The breather equalizes internal pressure with atmosphere. It does not lubricate bearings, increase the gear ratio, or cool the transmission. A plugged breather causes seal leaks.

25. C — Aeration is air being drawn into or churned in the fluid. It is not operating temperature, correct level, or a TES rating. Aeration causes foaming, pressure loss, and overheating.

26. A — TES is a transmission fluid performance specification standard. It is not an axle lubricant, cooler brand, or code prefix. Approved fluid meets the required TES specification.

27. B — A slip yoke accommodates length change as the suspension moves. It does not multiply torque, hold the ring gear, or regulate pressure. The splined slip joint handles the changing distance.

28. C — The planet carrier holds the planet gears and rotates as a unit. It is not the central gear (sun), the internally toothed outer member (ring), or the outer ring. The carrier can serve as input, output, or held member.

29. A — A torque converter is a fluid coupling that connects engine to transmission and multiplies torque. It is not a mechanical clutch, a gear-driven pump only, or a friction brake. The converter uses fluid coupling.
30. D — Pinion depth is adjusted with shims behind the pinion. It is not set by adding fluid, tightening the breather, or changing driveshaft phase. The tooth contact pattern verifies the depth.
31. A — A center support bearing supports the joint between sections of a two-piece shaft. It does not multiply torque, regulate pressure, or set backlash. The bearing is carried in a rubber mount.
32. B — The working angle is the angle through which a U-joint operates. It is not yoke alignment (phasing), lubricant level, or bearing preload. Correct, canceling working angles prevent vibration.
33. B — The tooth contact pattern confirms correct pinion depth and backlash. It does not measure line pressure, read TCM data, or check stall speed. The pattern is the final verification of gear setup.
34. A — An output retarder is located at or near the transmission output. It is not inside the differential, on the slip yoke, or in the wheel end. The output retarder acts on the output side of the gearing.
35. D — A freeze frame is the operating conditions recorded when a code set. It is not a balance, backlash, or runout value. The snapshot aids diagnosis of intermittent faults.
36. B — The ring gear is the large gear driven by the pinion and bolted to the differential case. It is not the small driven gear, a preload device, or a cooling component. The ring gear provides reduction and carries the differential.
37. B — The lockup clutch mechanically links the engine and transmission to eliminate slip. It does not redirect fluid, drive the pump, or support the turbine. Lockup improves cruise efficiency.
38. C — EP lubricant is required in a hypoid axle because of the sliding tooth action under high load. It is not due to low temperature, sensor load, or housing pressure. The EP requirement follows from hypoid geometry.

39. D — The pressure regulator valve establishes the main regulated line pressure. It does not produce pressure (the pump does), cool fluid, or route it (the valve body does). The regulator sets system pressure.

40. C — A planetary gearset is characterized by gears in constant mesh with sun, planets, carrier, and ring members. It does not slide gears, use a single gear, or have no moving parts. Constant mesh enables shifting under load.