PRACTICE EXAM 16 — QUESTIONS 1–40

1. Which component throws fluid toward the turbine and is driven directly by the engine?

A. The stator

B. The lockup clutch

C. The turbine

D. The impeller

2. Which component redirects returning fluid to multiply torque at low speed?

A. The impeller

B. The turbine

C. The lockup clutch

D. The stator

3. Which component connects to the transmission input shaft inside the converter?

A. The impeller

B. The turbine

C. The stator

D. The pump

4. Which component mechanically links the engine to the transmission to eliminate slip?

A. The stator

B. The impeller

C. The lockup clutch

D. The turbine

5. Which planetary member is the central gear?

A. The sun gear

B. The ring gear

C. The planet carrier

D. The pinion bearing

6. Which planetary member has internal teeth and forms the outer gear?

A. The sun gear

B. The planet carrier

C. The pinion

D. The ring gear

7. Which component is the hydraulic control center that routes pressurized fluid?

A. The pump

B. The cooler

C. The converter

D. The valve body

8. Which component is the source of all hydraulic pressure in the transmission?

A. The pump

B. The valve body

C. The cooler

D. The breather

9. Which component establishes the main regulated line pressure?

A. The output speed sensor

B. The cooler bypass

C. The pressure regulator valve

D. The breather

10. Which device converts the TCM's electrical command into hydraulic action?

A. The fluid temperature sensor

B. A solenoid

C. The output speed sensor

D. The breather

11. Which component is the electronic controller that reads sensors and commands shift logic?

A. The pump

B. The valve body

C. The cooler

D. The transmission control module

12. Which input lets the TCM calculate gear ratio and detect slip when compared with output speed?

A. Fluid temperature

B. Input (turbine) speed

C. Differential backlash

D. Cabin temperature

13. Which component carries away the heat generated by converter slip and retarder use?

A. The breather

B. The differential

C. The transmission cooling system

D. The slip yoke

14. Which component provides supplemental braking by absorbing driveline energy?

A. The retarder

B. The torque converter

C. The pressure regulator

D. The output speed sensor

15. Which stack of friction and steel plates holds or drives a gearset member when hydraulically applied?

A. The valve body

B. The clutch pack

C. The breather

D. The cooler

16. Which fluid specification standard governs heavy-duty transit transmission fluid?

A. EP hypoid rating

B. SAE engine oil grade

C. TES approval

D. DOT brake fluid rating

17. Which captured data set records the operating conditions present when a code set?

A. Backlash reading

B. Runout value

C. Freeze frame (snapshot)

D. Balance reading

18. Which converter phase produces maximum torque multiplication?

A. Lockup phase

B. Coupling phase

C. Freewheeling phase

D. Stall phase

19. Which capability adjusts clutch apply timing and pressure to compensate for wear?

A. Pressure regulation

B. Adaptive learning

C. Lockup control

D. Pinion preload

20. Which component allows the engine to idle while the bus is stopped in gear?

A. The torque converter fluid coupling

B. The lockup clutch

C. The pump

D. The stator one-way clutch

21. Which test measures the rotating torque required to turn the pinion during axle setup?

A. A line pressure test

B. A stall test

C. A runout check

D. A pinion bearing preload measurement

22. Which tool measures driveshaft runout and ring gear backlash?

A. A dial indicator

B. A test light

C. A coolant hydrometer

D. A timing light

23. Which converter solenoid applies and releases the lockup clutch?

A. The lockup (converter clutch) solenoid

B. The fluid temperature sensor

C. The output speed sensor

D. The breather valve

24. Which driveshaft component allows the shaft to change length as the suspension moves?

A. The center support bearing

B. The slip yoke

C. The universal joint cross

D. The ring gear

25. Which pivoting coupling allows the driveshaft to transmit torque through an angle?

A. The universal joint

B. The slip yoke

C. The center bearing

D. The pinion gear

26. Which component supports the joint between sections of a two-piece driveshaft?

A. The slip yoke

B. The pinion

C. The center support bearing

D. The differential case

27. Which measurement describes a rotating part's deviation from true rotation?

A. Backlash

B. Runout

C. Preload

D. End play

28. Which gearset turns power 90 degrees and provides final reduction in the axle?

A. The planetary set

B. The slip yoke

C. The hypoid ring and pinion

D. The differential spider gears

29. Which axle assembly splits torque to both wheels while allowing different wheel speeds?

A. The differential

B. The pinion alone

C. The slip yoke

D. The breather

30. Which gearset member is splined to the axle shaft inside the differential?

A. The ring gear

B. The differential side gear

C. The pinion

D. The carrier bearing

31. Which adjustment is made with shims behind the pinion and verified by the contact pattern?

A. Pinion depth

B. Backlash

C. Breather pressure

D. Driveshaft phase

32. Which axle component equalizes internal housing pressure with atmosphere?

A. The pinion seal

B. The ring gear

C. The breather (vent)

D. The slip yoke

33. Which lubricant is required for a hypoid drive axle?

A. Extreme-pressure (EP) hypoid gear lubricant

B. General automatic transmission fluid

C. Engine oil

D. Non-EP universal oil

34. Which design has the wheel bearings carry vehicle weight while the shaft transmits torque?

A. A semi-floating-only axle

B. A full-floating axle

C. A planetary final drive

D. A hypoid offset only

35. Which inspection method reveals where the pinion contacts the ring gear teeth?

A. A line pressure test

B. A stall test

C. A runout check

D. The tooth contact pattern with marking compound

36. Which axle component retains lubricant and keeps contaminants out at the wheel end?

A. The breather

B. The pinion

C. The wheel seal

D. The ring gear

37. Which condition of occurrence points axle noise to the differential internal gears?

A. Noise on straight acceleration

B. Noise on straight coast

C. Cyclic noise with wheel speed

D. Noise only when cornering

38. Which gear is driven by the driveshaft and meshes with the larger ring gear?

A. The sun gear

B. The pinion

C. The carrier

D. The side gear

39. Which deliberate bearing load is set during axle assembly to eliminate looseness?

A. Backlash

B. Runout

C. Preload

D. End play

40. Which side of the ring and pinion mesh is loaded during acceleration?

A. The coast side

B. The turn side

C. The idle side

D. The drive side

Answer Key & Full Answer Explanations

1. D — The impeller throws fluid toward the turbine and is driven directly by the engine. The stator redirects fluid, the lockup clutch links the engine mechanically, and the turbine is driven by the fluid. The impeller is the engine-driven pump element.

2. D — The stator redirects returning fluid to multiply torque at low speed. The impeller is engine-driven, the turbine drives the input, and the lockup clutch links the engine. The stator enables torque multiplication.

3. B — The turbine connects to the transmission input shaft. The impeller is engine-driven, the stator redirects fluid, and the pump supplies pressure. The turbine transfers motion into the transmission.

4. C — The lockup clutch mechanically links the engine to the transmission to eliminate slip. The stator redirects fluid, the impeller is engine-driven, and the turbine drives the input. Lockup improves cruise efficiency.

5. A — The sun gear is the central gear in a planetary set. The ring gear is the outer member, the carrier holds the planets, and the pinion bearing is unrelated. The sun gear sits at the center.

6. D — The ring gear has internal teeth and forms the outer gear. The sun gear is central, the carrier holds the planets, and the pinion is a planet gear. The ring gear meshes with the planet gears from outside.

7. D — 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 fluid/mechanical link. The valve body directs flow.

8. A — The pump is the source of all hydraulic pressure. The valve body routes it, the cooler removes heat, and the breather vents. The engine-driven pump produces system pressure.

9. C — The pressure regulator valve establishes the main regulated line pressure. The speed sensor, cooler bypass, and breather do not regulate pressure. The regulator sets the baseline system pressure.

10. B — A solenoid converts the TCM's electrical command into hydraulic action. Sensors are inputs and the breather is unrelated. Solenoids are the TCM's output devices.

11. D — The transmission control module reads sensors and commands shift logic. The pump, valve body, and cooler are hydraulic components. The TCM is the electronic decision-maker.

12. B — Input (turbine) speed, compared with output speed, lets the TCM calculate gear ratio and detect slip. Fluid temperature, backlash, and cabin temperature do not. The input-versus-output relationship reveals slip.

13. C — The transmission cooling system carries away the heat from converter slip and retarder use. The breather, differential, and slip yoke do not. The cooling system manages thermal load.

14. A — The retarder provides supplemental braking by absorbing driveline energy. The converter, regulator, and speed sensor do not. The retarder spares the service brakes.

15. B — The clutch pack is the stack of friction and steel plates that holds or drives a gearset member when hydraulically applied. The valve body, breather, and cooler do not. Clutch packs execute the gear changes.

16. C — TES approval is the fluid specification standard for heavy-duty transit transmission fluid. EP hypoid, SAE engine oil, and DOT brake ratings apply to other fluids. TES governs transmission fluid.

17. C — A freeze frame (snapshot) records the operating conditions present when a code set. Backlash, runout, and balance are mechanical measurements. The snapshot aids intermittent-fault diagnosis.

18. D — The stall phase produces maximum torque multiplication, with the vehicle held and the turbine nearly stationary. The lockup and coupling phases have little or no multiplication, and freewheeling is unrelated. Stall is the maximum-multiplication phase.

19. B — Adaptive learning adjusts clutch apply timing and pressure to compensate for wear. Pressure regulation, lockup control, and pinion preload do not. Adaptives maintain shift quality over time.

20. A — The torque converter fluid coupling allows the engine to idle while the bus is stopped in gear, since it permits slip. The lockup clutch, pump, and stator one-way clutch do not provide this. Fluid coupling enables idle-in-gear.

21. D — A pinion bearing preload measurement determines the rotating torque required to turn the pinion. A line pressure test, stall test, and runout check measure other things. Preload is measured as rotating torque.

22. A — A dial indicator measures driveshaft runout and ring gear backlash. A test light, hydrometer, and timing light measure unrelated quantities. The dial indicator reads rotational deviation and clearance.

23. A — The lockup (converter clutch) solenoid applies and releases the lockup clutch. The temperature sensor, speed sensor, and breather do not. The solenoid lets the TCM control lockup.

24. B — The slip yoke allows the shaft to change length as the suspension moves. The center bearing supports a two-piece shaft, the U-joint cross transmits torque through an angle, and the ring gear is unrelated. The slip joint handles length change.

25. A — The universal joint allows the driveshaft to transmit torque through an angle. The slip yoke handles length, the center bearing supports the shaft, and the pinion is an axle gear. The U-joint pivots while transmitting torque.

26. C — The center support bearing supports the joint between sections of a two-piece driveshaft. The slip yoke, pinion, and differential case do not. The center bearing is carried in a rubber mount.

27. B — Runout describes a rotating part's deviation from true rotation. Backlash is tooth clearance, preload is bearing load, and end play is axial movement. Runout is measured with a dial indicator.

28. C — The hypoid ring and pinion turns power 90 degrees and provides final reduction. The planetary set, slip yoke, and spider gears do not. The ring and pinion is the final drive gearset.

29. A — The differential splits torque to both wheels while allowing different wheel speeds. The pinion alone, slip yoke, and breather do not. The differential enables the wheel-speed difference in turns.

30. B — The differential side gear is splined to the axle shaft inside the differential. The ring gear, pinion, and carrier bearing are not. The side gears deliver torque to the axle shafts.

31. A — Pinion depth is made with shims behind the pinion and verified by the contact pattern. Backlash, breather pressure, and driveshaft phase are different adjustments. The pattern confirms correct depth.

32. C — The breather (vent) equalizes internal housing pressure with atmosphere. The pinion seal, ring gear, and slip yoke do not. A plugged breather causes seal leaks.

33. A — A hypoid drive axle requires extreme-pressure (EP) hypoid gear lubricant. ATF, engine oil, and non-EP universal oil cannot handle the sliding tooth action. EP lubricant is mandatory for hypoid gears.

34. B — A full-floating axle has the wheel bearings carry vehicle weight while the shaft transmits torque. A semi-floating-only axle, planetary final drive, and hypoid offset do not describe this. Load and torque follow separate paths.

35. D — The tooth contact pattern with marking compound reveals where the pinion contacts the ring gear teeth. A line pressure test, stall test, and runout check do not. The pattern verifies depth and backlash.

36. C — The wheel seal retains lubricant and keeps contaminants out at the wheel end. The breather, pinion, and ring gear do not. A failed wheel seal can leak onto the brakes.

37. D — Noise only when cornering points axle noise to the differential internal gears, which rotate relative to each other only in turns. Straight acceleration, straight coast, and wheel-speed-cyclic noise point elsewhere. Turn-only noise isolates the differential internals.

38. B — The pinion is driven by the driveshaft and meshes with the larger ring gear. The sun gear, carrier, and side gear are not. The pinion delivers torque into the ring gear.

39. C — Preload is the deliberate bearing load set during assembly to eliminate looseness. Backlash is tooth clearance, runout is rotational deviation, and end play is axial movement. Preload is measured as rotating torque.

40. D — The drive side of the ring and pinion mesh is loaded during acceleration. The coast side loads on deceleration, and the turn and idle sides are not mesh-loading conditions. The drive side carries the load under power.