

PRACTICE EXAM 12

1. The air compressor on a transit bus continues to spin with the engine but stops building pressure when:

- A. The governor reaches cut-out and signals the unloader
- B. The brakes are applied by the driver
- C. The air dryer begins its drying cycle
- D. The spring brakes are released

2. Compressed air must be dried before storage because moisture in the system can:

- A. Corrode components and freeze, jamming valves
- B. Improve the coefficient of friction
- C. Increase compressor pumping efficiency
- D. Raise the governor cut-out pressure

3. The governor's cut-in pressure is set lower than cut-out so that:

- A. The compressor never builds pressure
- B. The system cycles through a working pressure range
- C. The air dryer purges continuously
- D. The spring brakes apply automatically

4. A static leak test is performed with the brakes released because this condition isolates leaks on the:

- A. Brake chamber service diaphragms
- B. Relay valve delivery seals
- C. Supply side of the air system

D. Foot valve application passages

5. Air heard purging at the dryer when the bus reaches full pressure indicates that the:

A. Compressor has unloaded at cut-out and the dryer is regenerating

B. Safety relief valve is venting over-pressure

C. Spring brakes have applied automatically

D. Master cylinder is bypassing internally

6. A relay valve is mounted near the far chambers so that brake apply and release are:

A. Sped up using a fast signal and local air

B. Converted into hydraulic pressure

C. Limited to the parking brake circuit

D. Slowed to prevent harsh stops

7. The treadle valve does not create braking force; instead it:

A. Compresses additional air for each stop

B. Meters stored reservoir air to the circuits

C. Generates hydraulic pressure at the wheels

D. Cages the spring brakes during braking

8. A drum worn beyond its stamped maximum diameter must be replaced because it:

A. Improves heat dissipation when thin

B. Increases the coefficient of friction

C. Lowers the brake fluid boiling point

D. Is too thin to absorb braking heat safely

9. Brake chambers on the same axle must match in type and size so that:

- A. The governor can cut out earlier
- B. The air dryer purges in sync
- C. The compressor workload is reduced
- D. They produce equal braking force and prevent pull

10. Excessive pushrod stroke reduces braking force because chamber force:

- A. Increases as the pushrod nears full travel
- B. Is unaffected by pushrod position
- C. Falls off as the pushrod extends near the end of travel
- D. Converts to hydraulic pressure at long stroke

11. An automatic slack adjuster showing long stroke should be diagnosed rather than manually adjusted because manual back-adjustment:

- A. Increases the spring brake force
- B. Improves the lining coefficient of friction
- C. Masks the real fault and can damage the adjuster
- D. Raises the governor cut-out pressure

12. The spring (parking) brake is held released during driving by air pressure, which means a loss of air will:

- A. Release the parking brake fully
- B. Apply the parking brake automatically

- C. Have no effect on the parking brake
- D. Convert the brake to hydraulic operation

13. A spring brake chamber must never be disassembled because the power spring:

- A. Contains hydraulic fluid under pressure
- B. Is required for the air dryer purge
- C. Stores enough energy to cause lethal injury
- D. Sets the governor cut-out pressure

14. Anti-compounding is necessary because the spring and service sections act on:

- A. Separate axles independently
- B. The air dryer purge valve
- C. The same pushrod and foundation brake
- D. The wheel speed sensor circuit

15. The parking control valve auto-applies the spring brakes at low pressure so that the bus:

- A. Builds air pressure faster
- B. Cannot continue operating with dangerously low air
- C. Purges the air dryer more often
- D. Raises the governor cut-out

16. ABS is described as a supervisory system because, when it faults, it:

- A. Disables all braking on the bus
- B. Reverts to normal braking and warns the driver

- C. Applies the spring brakes automatically
- D. Doubles the application pressure

17. The wheel speed sensor generates its signal by reading a rotating tone ring, so an incorrect air gap will:

- A. Corrupt the wheel speed signal
- B. Increase the reservoir capacity
- C. Cage the spring brakes
- D. Raise the governor cut-out

18. ATC shares hardware with ABS, which means a faulty wheel speed sensor can:

- A. Increase the compressor output
- B. Improve traction on ice
- C. Purge the air dryer continuously
- D. Disable both ABS and ATC at that wheel

19. ESC adds steering angle, yaw rate, and lateral acceleration sensors so it can:

- A. Purge the air dryer at cut-out
- B. Compare the intended path to the vehicle's actual motion
- C. Cage the spring brakes during turns
- D. Raise the governor cut-out pressure

20. A wheel speed sensor code should prompt circuit testing first because the code indicates:

- A. The exact failed part to replace
- B. The area where a problem is detected

- C. That all braking is lost
- D. The governor cut-out setting

21. A pedal that slowly sinks under steady pressure with no external leak indicates that fluid is:

- A. Trapped as air in the lines
- B. Boiling from contamination
- C. Bypassing internally past the master-cylinder seals
- D. Lubricating the caliper guide pins

22. Brake fluid is hygroscopic, so over time absorbed moisture will:

- A. Raise the fluid's boiling point
- B. Lower the fluid's boiling point and invite corrosion
- C. Make the fluid incompressible
- D. Improve the pedal feel under heat

23. Petroleum contamination of brake fluid requires component replacement because petroleum:

- A. Swells and destroys rubber seals
- B. Raises the boiling point too high
- C. Improves the pedal feel
- D. Speeds the air dryer purge

24. Heavy-vehicle wheel bearings are set to a small end play rather than preloaded so there is clearance for:

- A. The governor to cut out
- B. The air dryer to purge

- C. The spring brake to cage
- D. Lubrication and thermal expansion

25. A failed wheel seal is a two-fold failure because it both contaminates the brake and:

- A. Raises the governor cut-out
- B. Speeds the air dryer purge
- C. Starves the bearing of lubricant
- D. Increases reservoir capacity

26. A growling wheel-end noise that rises with road speed and changes when cornering, unaffected by braking, indicates a:

- A. Glazed brake lining
- B. Leaking foot valve exhaust
- C. Saturated air dryer
- D. Worn wheel bearing

27. During the air-brake pre-trip, drawing down pressure should cause the spring brakes to auto-apply, which confirms that the:

- A. Air dryer is saturated
- B. Wheel bearings are adjusted
- C. Compressor builds too slowly
- D. Fail-safe spring-brake function works

28. Both released and applied leak tests are performed because each condition:

- A. Checks the hydraulic circuit

- B. Isolates a different half of the air system
- C. Measures wheel bearing end play
- D. Verifies the governor cut-out

29. Governor cut-out should be verified with a known-accurate test gauge because the dashboard gauge:

- A. Is not accurate enough for setting specifications
- B. Reads only spring-brake pressure
- C. Measures hydraulic pressure
- D. Cannot display pressure above 60 psi

30. Pushrod stroke is the master indicator of brake adjustment because excessive stroke means the brake:

- A. Applies late and with reduced force
- B. Applies earlier and harder
- C. Cannot release at all
- D. Builds pressure faster

31. A leak heard constantly at the dryer exhaust after full charge indicates a purge valve that is:

- A. Closed and working correctly
- B. Stuck open and venting continuously
- C. Regenerating the desiccant
- D. Sized for the reservoir

32. Kinetic energy a brake must absorb rises with the square of speed, which is why a bus at 40 mph carries:

- A. The same energy as at 20 mph

- B. Twice the energy it has at 20 mph
- C. Half the energy it has at 20 mph
- D. Four times the energy it has at 20 mph

33. One-way check valves between reservoirs preserve braking air by preventing:

- A. A leak in one circuit from draining another
- B. The compressor from unloading
- C. The air dryer from purging
- D. The governor from cutting out

34. A bus pulls toward the side with the working brake when one caliper seizes because the working side:

- A. Produces braking force while the seized side does little
- B. Grips less than the seized side
- C. Applies no braking force
- D. Converts to hydraulic pressure

35. The pressure protection valve cuts off accessory air during low pressure so that the remaining air:

- A. Purges the dryer faster
- B. Cages the spring brakes
- C. Raises the governor cut-out
- D. Is preserved for the brakes

36. A relay valve that won't exhaust on release causes a dragging brake because air is:

- A. Drained from the reservoir too quickly

- B. Trapped in the chambers, holding the brake applied
- C. Converted to hydraulic pressure
- D. Vented through the air dryer

37. An air disc brake resists fade better than a drum brake because its rotor:

- A. Uses a larger brake chamber
- B. Requires no friction material
- C. Sheds heat more effectively when open or vented
- D. Has a higher moisture content

38. A spongy hydraulic pedal that improves after pumping indicates air in the lines because air, unlike fluid, is:

- A. Hygroscopic
- B. Petroleum-based
- C. Compressible
- D. Incompressible

39. The supply (wet) reservoir is named for the fact that it is where:

- A. Residual moisture and oil collect first
- B. Brake fluid is stored
- C. The compressor is mounted
- D. The spring brakes are caged

40. A modern air-braked transit bus must have ABS because it is required by:

- A. The brake fluid specification

- B. FMVSS 121
- C. The wheel bearing manufacturer
- D. The air dryer service interval

41. A combination chamber's service section is applied during normal driving when:

- A. The spring section is exhausted
- B. The power spring is caged
- C. The parking knob is pulled out
- D. Air pressure is delivered from the foot valve

42. The dual-circuit brake system exists so that a single circuit failure leaves the bus with:

- A. No service braking at all
- B. Only the parking brake by pumping
- C. Braking from the other independent circuit
- D. Braking only through the ABS modulator

43. Caging a spring brake before service is required because it:

- A. Increases the spring's applied force
- B. Tests the diaphragm for leaks
- C. Permanently disables the brake
- D. Mechanically holds the lethal power spring released

44. A drum brake's friction comes from the shoes pressing outward, which the S-cam accomplishes by:

- A. Converting air to hydraulic pressure

- B. Spreading the shoe ends apart when rotated
- C. Caging the power spring
- D. Reading the wheel speed

45. Oil-fouled desiccant must have its source corrected before the cartridge is replaced because otherwise the:

- A. Governor will cut out too soon
- B. Spring brakes will not cage
- C. Wheel bearings will overheat
- D. New desiccant will quickly foul again

46. A parking brake that pops out by itself at idle most likely indicates that system pressure has:

- A. Exceeded the governor cut-out
- B. Reached the safety relief setting
- C. Risen above maximum operating pressure
- D. Dropped to the auto-apply threshold from a leak

47. Documentation records actual readings against published limits because this:

- A. Creates a maintenance history and proves compliance
- B. Replaces the need for measurement tools
- C. Allows skipping the next pre-trip
- D. Substitutes for the manufacturer's specifications

48. A wheel bearing adjusted too tight overheats because preloading leaves no clearance for:

- A. The governor to cut out

- B. The spring brake to apply
- C. Lubrication and thermal expansion
- D. The air dryer to purge

49. ATC brakes a spinning drive wheel in order to:

- A. Cage the spring brakes
- B. Purge the air dryer
- C. Raise the governor cut-out
- D. Transfer torque to the wheel with grip

50. A bus loses pressure faster when the brakes are applied and held than when released, which points to a leak on the:

- A. Supply reservoir
- B. Application side
- C. Governor signal line
- D. Compressor intake

51. The air dryer regenerates its desiccant during the purge cycle by:

- A. Raising the compressor output
- B. Caging the spring brakes
- C. Increasing reservoir capacity
- D. Passing dry air back through it while venting

52. A bus that builds air slowly with good compressor output, no leaks, and a dryer that never "pops" most likely has a:

- A. Worn brake drum
- B. Glazed lining
- C. Restricted air dryer or failed purge
- D. Failed wheel speed sensor

53. Uneven inboard/outboard pad wear on an air disc brake indicates the caliper is:

- A. The wrong chamber type
- B. Over-pressurized
- C. Not floating freely on its guide pins
- D. Missing its slack adjuster

54. Brake fade on a long downgrade is dangerous because heat:

- A. Lowers the lining's coefficient of friction
- B. Raises the lining's friction coefficient
- C. Improves drum strength
- D. Increases reservoir capacity

55. Bleeding a hydraulic brake system is required after opening it because opening the system:

- A. Lowers the fluid boiling point permanently
- B. Lets air enter, which must be removed
- C. Increases the master cylinder bore
- D. Cages the spring brakes

56. A leaking wheel cylinder on a hydraulic drum brake is signaled by fluid:

- A. At the backing plate, contaminating the linings
- B. Purging from the air dryer
- C. In the spring brake chamber
- D. At the governor signal line

57. The relay valve's small control line connects to the foot valve so that it can:

- A. Receive a fast application signal
- B. Convert air to hydraulic pressure
- C. Cage the spring brakes
- D. Store reserve air

58. A compressor that never unloads and over-pressurizes the system most likely has a fault in the:

- A. Brake chamber diaphragm
- B. Wheel speed sensor
- C. Governor or unloader mechanism
- D. Quick-release valve

59. A safety relief valve venting near 150 psi should prompt the technician to diagnose the:

- A. Brake chamber diaphragm
- B. Wheel speed sensor
- C. Governor or unloader, not the relief valve
- D. Air dryer desiccant

60. Clearing ABS codes and confirming the self-test passes after a repair verifies that the:

- A. Governor cut-out has increased
- B. Wheel bearings are repacked
- C. Reservoir capacity has increased
- D. Repair corrected the fault and the system is functional

Answer Key & Full Answer Explanations

1. A — The compressor stops building when the governor reaches cut-out and signals the unloader to hold the intake valves open, while the compressor keeps spinning. Brake application, the drying cycle, and spring release do not stop pressure build.
2. A — Moisture must be removed because it corrodes components and can freeze to jam valves and block lines. It does not improve friction, increase pumping efficiency, or raise cut-out.
3. B — Cut-in is set lower than cut-out so the system cycles through a working pressure range, building to cut-out and reloading at cut-in. It does not stop building, purge continuously, or apply the spring brakes.
4. C — A static (released) leak test isolates leaks on the supply side, which is pressurized at rest. Chamber diaphragms, relay delivery seals, and foot valve application passages leak only when applied.
5. A — The purge heard at full pressure means the compressor has unloaded at cut-out and the dryer is venting and regenerating its desiccant. It is not the relief valve, spring brakes, or master cylinder.
6. A — A relay valve near the far chambers speeds apply and release using a fast control signal and local reservoir air. It does not convert to hydraulic pressure, serve only parking, or slow stops.
7. B — The treadle valve meters stored reservoir air to the circuits rather than creating braking force. It does not compress new air, make hydraulic pressure, or cage springs.
8. D — A drum worn beyond maximum diameter is too thin to absorb braking heat safely and must be replaced. A thin drum does not improve dissipation, raise friction, or affect fluid boiling point.

9. D — Chambers on the same axle must match so they produce equal braking force and prevent pull. Matching does not allow earlier cut-out, sync purging, or reduce compressor workload.

10. C — Excessive stroke reduces force because chamber force falls off as the pushrod extends near the end of its travel. Force does not increase near full travel, stay unaffected, or convert to hydraulic pressure.

11. C — Long stroke on an automatic slack adjuster must be diagnosed because manual back-adjustment masks the real fault and can damage the adjuster. It does not increase spring force, improve friction, or raise cut-out.

12. B — Because the spring brake is held released by air, a loss of air applies the parking brake automatically — the fail-safe behavior. It does not release the brake, have no effect, or convert to hydraulic.

13. C — A spring chamber must never be disassembled because the power spring stores enough energy to cause lethal injury. It contains no hydraulic fluid, is not part of the purge, and does not set cut-out.

14. C — Anti-compounding is necessary because the spring and service sections act on the same pushrod and foundation brake, so their forces could stack destructively. They are not on separate axles or tied to the purge valve or sensor.

15. B — The parking control valve auto-applies at low pressure so the bus cannot continue operating with dangerously low air. It does not speed build, purge more often, or raise cut-out.

16. B — ABS is supervisory because, on a fault, it reverts to normal braking and warns the driver, retaining full standard brakes. It does not disable all braking, apply the springs, or double pressure.

17. A — Because the sensor reads a rotating tone ring, an incorrect air gap corrupts the wheel speed signal. It does not increase capacity, cage springs, or raise cut-out.

18. D — Because ATC shares the wheel speed sensors with ABS, a faulty sensor can disable both ABS and ATC at that wheel. It does not increase output, improve traction, or purge the dryer.

19. B — ESC adds steering angle, yaw rate, and lateral acceleration sensors so it can compare the driver's intended path to the vehicle's actual motion. It does not purge the dryer, cage springs, or raise cut-out.

20. B — A wheel speed sensor code indicates the area where a problem is detected, not always the exact failed part, so the circuit is tested first. It does not mean total loss of braking or report the cut-out setting.

21. C — A pedal that slowly sinks under steady pressure with no external leak means fluid is bypassing internally past the master-cylinder seals. It is not trapped air, boiling fluid, or guide-pin lubrication.

22. B — Because brake fluid is hygroscopic, absorbed moisture lowers the fluid's boiling point and invites corrosion. It does not raise the boiling point, make fluid incompressible, or improve pedal feel under heat.

23. A — Petroleum contamination requires component replacement because petroleum swells and destroys rubber seals. It does not raise the boiling point usefully, improve pedal feel, or speed purging.

24. D — Heavy-vehicle bearings are set to a small end play so there is clearance for lubrication and thermal expansion. The clearance is unrelated to cut-out, purging, or caging.

25. C — A failed wheel seal is two-fold because it contaminates the brake and starves the bearing of lubricant. It does not raise cut-out, speed purging, or increase capacity.

26. D — A growl that rises with road speed and changes when cornering, unaffected by braking, indicates a worn wheel bearing. A glazed lining, foot valve leak, or dryer would not produce this.

27. D — Automatic spring-brake application during draw-down confirms the fail-safe spring-brake function works. It does not indicate dryer saturation, bearing adjustment, or slow compressor build.

28. B — Both leak tests are performed because each condition isolates a different half of the air system — released for supply-side, applied for application-side. Neither checks the hydraulic circuit, measures bearing play, or verifies cut-out.

29. A — Governor cut-out is verified with a known-accurate test gauge because the dashboard gauge is not accurate enough for setting specifications. The dash gauge does not read only spring pressure, measure hydraulic pressure, or cap at 60 psi.
30. A — Pushrod stroke is the master indicator because excessive stroke means the brake applies late and with reduced force. It does not apply earlier and harder, fail to release, or build pressure faster.
31. B — A constant leak at the dryer exhaust after full charge indicates a purge valve stuck open and venting continuously. A closed/working valve, regeneration, or sizing would not leak steadily.
32. D — Because energy rises with the square of speed, a bus at 40 mph carries four times the energy it has at 20 mph. It is not the same, twice, or half.
33. A — One-way check valves preserve braking air by preventing a leak in one circuit from draining another. They do not stop the compressor unloading, the dryer purging, or the governor cutting out.
34. A — When one caliper seizes, the working side produces braking force while the seized side does little, so the bus pulls toward the working side. The working side does not grip less, apply nothing, or convert to hydraulic.
35. D — The pressure protection valve cuts off accessory air during low pressure so the remaining air is preserved for the brakes. It does not speed purging, cage springs, or raise cut-out.
36. B — A relay valve that won't exhaust traps air in the chambers, holding the brake applied and causing drag. It does not drain the reservoir, convert to hydraulic, or vent through the dryer.
37. C — An air disc brake resists fade better because its open or vented rotor sheds heat more effectively than an enclosed drum. It does not use a larger chamber, eliminate friction material, or hold more moisture.
38. C — A spongy pedal that improves after pumping indicates air in the lines because air, unlike fluid, is compressible. Fluid is incompressible; air is neither hygroscopic nor petroleum-based in this context.

39. A — The supply (wet) reservoir is named because residual moisture and oil collect there first. It does not store brake fluid, mount the compressor, or cage the springs.

40. B — Modern air-braked transit buses must have ABS because FMVSS 121 requires it. The fluid spec, bearing manufacturer, and dryer interval do not mandate ABS.

41. D — The service section is applied during normal driving when air pressure is delivered from the foot valve. Exhausting the spring section, caging, or pulling the knob applies the parking brake instead.

42. C — The dual-circuit system exists so a single circuit failure leaves the bus with braking from the other independent circuit. It does not leave no braking, parking-only, or modulator-only braking.

43. D — Caging is required before service because it mechanically holds the lethal power spring released. It does not increase applied force, test the diaphragm, or permanently disable the brake.

44. B — The S-cam produces friction by spreading the shoe ends apart against the drum when rotated. It does not convert to hydraulic pressure, cage the spring, or read wheel speed.

45. D — Oil-fouled desiccant requires correcting the source first, or the new desiccant will quickly foul again. The governor, spring caging, and bearings are unrelated to oil contamination.

46. D — A parking knob popping out at idle indicates pressure has dropped to the auto-apply threshold from a leak. It is not over-pressure at cut-out, relief, or maximum.

47. A — Recording actual readings against published limits creates a maintenance history and proves compliance. It does not replace tools, specifications, or the next pre-trip.

48. C — A preloaded bearing overheats because it leaves no clearance for lubrication and thermal expansion. The clearance is unrelated to cut-out, spring apply, or purging.

49. D — ATC brakes a spinning drive wheel to transfer torque to the wheel with grip. It does not cage springs, purge the dryer, or raise cut-out.

50. B — Losing pressure faster when applied and held than when released points to a leak on the application side, pressurized only during application. The supply reservoir, governor signal line, and intake would not behave this way.

51. D — The dryer regenerates its desiccant during purge by passing dry air back through it while venting. It does not raise output, cage springs, or increase capacity.

52. C — Slow build with good compressor output, no leaks, and a dryer that never "pops" points to a restricted air dryer or failed purge. A worn drum, glazed lining, or failed sensor would not affect build.

53. C — Uneven inboard/outboard pad wear indicates the caliper is not floating freely on its guide pins. There is no slack adjuster on a disc brake, and a chamber type or over-pressure is not the cause.

54. A — Brake fade is dangerous because heat lowers the lining's coefficient of friction, reducing stopping power. Heat does not raise friction, improve drum strength, or increase capacity.

55. B — Bleeding is required after opening because opening the system lets air enter, which must be removed for a firm pedal. Opening does not permanently lower the boiling point, enlarge the bore, or cage springs.

56. A — A leaking wheel cylinder is signaled by fluid at the backing plate, contaminating the linings. The leak does not purge from the dryer, appear in the spring chamber, or at the governor signal line.

57. A — The relay valve's small control line connects to the foot valve so it can receive a fast application signal. It does not convert to hydraulic pressure, cage springs, or store reserve air.

58. C — A compressor that never unloads and over-pressurizes the system most often has a governor or unloader fault. The diaphragm, sensor, and quick-release valve are unrelated.

59. C — A relief valve venting near 150 psi should prompt diagnosing the governor or unloader, not the relief valve, since the valve is protecting against over-pressure. The diaphragm, sensor, and desiccant are unrelated.

60. D — Clearing codes and confirming the self-test passes verifies the repair corrected the fault and the system is functional. It does not raise cut-out, repack bearings, or increase capacity.