ASE T4 Truck Brakes Prep

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Practice Questions

Try all 30 first, then check the answer key at the back.

1. When inspecting a truck's spring brake chamber, a technician notices cracks in the non-pressure housing. What should the technician do?

A. Continue using the chamber but monitor the cracks
B. Repair the cracks with an approved adhesive
C. Cage the spring and reinforce the housing
D. Replace the spring brake chamber

2. A truck's parking brakes will not release completely. Technician A says this could be caused by a restricted air line to the spring brake chambers. Technician B says a damaged spring brake control valve could be the cause. Who is right?

A. B only
B. Neither A nor B
C. Both A and B
D. A only

3. What is the purpose of the anti-compounding feature in an air brake system?

A. To maintain equal braking force between all axles
B. To prevent excessive application force when service and spring brakes are applied simultaneously
C. To ensure the spring brakes apply in the event of air pressure loss
D. To prevent the release of parking brakes when air pressure is below 60 psi

4. What should be done before removing a spring brake chamber for service?

A. Mechanically cage the power spring
B. Drain all air from the air tanks
C. Remove the push rod clevis pin
D. Apply the service brakes fully

5. At what system air pressure should the spring brakes begin to release?

A. Between 10-20 psi
B. Between 65-75 psi
C. Between 90-100 psi
D. Between 40-60 psi

6. The dash-mounted parking brake control valve has full air pressure, but the parking brakes won't release. Technician A says to check for a damaged delivery line between the valve and the spring brake chambers. Technician B says to check if the spring brake chambers are frozen due to moisture. Who is right?

A. B only
B. Neither A nor B
C. Both A and B
D. A only

7. What is the purpose of caging bolts or caging tools when working with spring brake chambers?

A. To release the service brake diaphragm
B. To mechanically compress and hold the power spring for safe service or towing
C. To adjust the push rod stroke length
D. To measure brake chamber sizing

8. A driver reports that the parking brakes apply by themselves while driving. What is the most likely cause?

A. System air pressure dropping below approximately 40-60 psi
B. A defective parking brake dash control valve
C. Broken return springs in the brake assembly
D. Improperly adjusted brake shoes

9. During a pre-trip inspection, when should a driver test the trailer parking brake function?

A. By applying the service brakes and listening for air leaks
B. By checking if the trailer brake hand valve functions
C. By visually inspecting the trailer brake chambers only
D. By releasing only the tractor parking brakes and attempting to pull forward gently

10. What happens when the dash-mounted parking brake control is placed in the applied position?

A. The relay valve directs air to the quick release valve
B. The spring brake chambers lock mechanically in their current position
C. Air is exhausted from the spring brake chambers
D. Compressed air is sent to the service brake chambers

11. On a combination vehicle, a technician tests the tractor protection valve. When the trailer air supply knob is pulled out, what should happen?

A. All brakes on both tractor and trailer should release
B. Trailer spring brakes should apply automatically
C. The trailer service brakes should apply only
D. The tractor spring brakes should apply only

12. A truck's parking brakes apply too slowly when the control valve is activated. Technician A says a restricted exhaust port in the control valve could be the cause. Technician B says that weak power springs in the spring brake chambers could be the cause. Who is right?

A. A only
B. B only
C. Both A and B
D. Neither A nor B

13. According to DOT regulations, what percentage of a truck's service brake capacity must the parking brake system be able to hold?

A. At least 50%
B. At least 75%
C. At least 100%
D. At least 28%

14. Which component provides the mechanical force in a spring brake chamber for parking brake application?

A. The push rod return spring
B. The relay piston
C. The power spring
D. The service brake diaphragm

15. The spring brakes on a tractor-trailer do not apply automatically when system air pressure drops below 45 psi. What is the most likely cause?

A. Excessive push rod travel
B. A defective dash control valve
C. Broken power springs in the spring brake chambers
D. A leaking quick release valve

16. A truck's air compressor is constantly cycling on and off rapidly. What is the most likely cause?

A. Faulty governor
B. Air dryer malfunction
C. Excessive air tank volume
D. Low engine RPM

17. Technician A says that moisture in the air brake system can cause brake fade during repeated stops. Technician B says that moisture in the air brake system can freeze in cold weather and block air flow. Who is right?

A. A only
B. B only
C. Neither A nor B
D. Both A and B

18. A truck's air system takes too long to build pressure. Technician A says a clogged air inlet filter could be the cause. Technician B says a leaking compressor discharge line could be the cause. Who is right?

A. B only
B. Neither A nor B
C. Both A and B
D. A only

19. What component should be inspected first when diagnosing excessive oil in a truck's air system?

A. Governor
B. Compressor
C. Air dryer
D. Reservoirs

20. When checking an air dryer on a truck, what indicates that the desiccant material needs to be replaced?

A. Excessive moisture in the air tanks
B. Reduced air pressure in the primary tank
C. Increased cycle time of the compressor
D. Slow brake application

21. During an air system inspection, the technician notices the purge valve on the air dryer does not release air when the compressor unloads. What is the most likely cause?

A. Defective governor
B. Blocked air dryer inlet
C. Excessive system pressure
D. Faulty purge valve

22. According to FMVSS 121, what is the minimum air pressure build-up time requirement from 85 to 100 psi at engine idle speed?

A. 60 seconds
B. 90 seconds
C. 45 seconds
D. 30 seconds

23. What could cause a truck's low air pressure warning device to activate at 55 psi instead of the required minimum?

A. Worn brake shoes
B. Improperly adjusted pressure switch
C. Defective air gauge
D. Excessive air tank volume

24. A truck's air pressure builds to 125 psi and then stops building. Which component should be checked first?

A. Governor
B. Air dryer
C. Pressure relief valve
D. Compressor inlet valve

25. A truck experiences excessive air leakage when the service brakes are applied. The most accurate way to determine the exact location of the leak is to:

A. Listen for the sound of escaping air
B. Measure pressure drop over time
C. Replace all brake valves
D. Apply soapy water to suspected areas

26. What is the maximum allowable air pressure drop in a truck's service brake system during a static leakage test with brakes applied?

A. 5 psi per minute
B. 10 psi per minute
C. 3 psi per minute
D. 1 psi per minute

27. A truck's air dryer purge valve releases excessive amounts of oil along with air and moisture. What is the most likely cause?

A. Excessive system pressure
B. Faulty compressor
C. Contaminated air dryer desiccant
D. Defective purge valve

28. After replacing several air system components on a truck, what is the proper procedure to check for leaks in the system?

A. Build system to full pressure, turn off engine, release and apply brakes, and monitor pressure loss
B. Run the engine at high idle and listen for leaks
C. Apply soap solution to all new components while engine is running
D. Cycle the spring brakes repeatedly and check for pressure drops

29. The supply pressure gauge on a truck consistently shows a lower reading than the actual system pressure. What should be checked first?

A. Governor adjustment
B. Supply reservoir
C. Pressure protection valves
D. Air pressure gauge

30. What is the function of the one-way check valve between the compressor and the first (supply) reservoir?

A. Filter oil from the compressed air
B. Reduce moisture in the air system
C. Prevent air from flowing back to the compressor from the reservoir
D. Regulate maximum system pressure

Answer Key & Explanations

1. D — Replace the spring brake chamber
The non-pressure housing of a spring brake chamber contains a powerful compressed spring. Any cracks in this housing present a serious safety hazard as the housing could fail catastrophically. The chamber must be replaced immediately, not repaired, as these components are not serviceable.

2. C — Both A and B
Both technicians are correct. Parking brakes in air brake systems are released by air pressure. Either a restricted air line preventing full air pressure from reaching the spring brake chambers or a damaged control valve that doesn't allow proper air flow could prevent complete release of the parking brakes.

3. B — To prevent excessive application force when service and spring brakes are applied simultaneously
The anti-compounding feature prevents the application of both service brakes and spring brakes to the same brake chamber simultaneously. This prevents excessive force that could damage the foundation brake components when both systems are applied at once.

4. A — Mechanically cage the power spring
The compressed spring in a spring brake chamber stores tremendous energy that can cause serious injury or death if released uncontrolled. The spring must be mechanically caged (restrained) using the manufacturer's specified procedure before any disassembly or removal.

5. D — Between 40-60 psi
Federal regulations require that spring brakes begin to release as pressure builds between 40-60 psi. This ensures the vehicle remains immobilized by the spring brakes until sufficient air pressure is available for proper service brake operation.

6. C — Both A and B
Both are correct. A damaged delivery line would prevent air pressure from reaching the spring brake chambers to release them. Also, if moisture has frozen in the spring brake chambers, it could prevent them from releasing even with proper air pressure.

7. B — To mechanically compress and hold the power spring for safe service or towing
Caging bolts or tools are used to mechanically compress and hold the power spring in a compressed position. This allows for safe handling, service, or towing of the vehicle by keeping the spring brakes from applying, even with no air pressure in the system.

8. A — System air pressure dropping below approximately 40-60 psi
Spring brakes are designed to apply automatically when system air pressure drops below approximately 40-60 psi. A system air leak causing pressure to drop below this threshold would result in automatic application of the spring brakes while driving.

9. D — By releasing only the tractor parking brakes and attempting to pull forward gently
The trailer parking brake should be tested during a pre-trip inspection by releasing only the tractor parking brakes while keeping the trailer parking brakes applied. Then attempt to pull forward gently. This verifies that the trailer brakes are functioning and can hold the combination vehicle.

10. C — Air is exhausted from the spring brake chambers
When the dash-mounted parking brake control is placed in the applied position, it exhausts air from the spring brake chambers. This allows the power springs to extend and apply the brakes mechanically through the push rods.

11. B — Trailer spring brakes should apply automatically
When the trailer air supply knob is pulled out, it should exhaust air from the trailer service and supply lines, causing the trailer spring brakes to apply automatically. This is a safety feature that protects the tractor air system if the trailer breaks away or develops severe air leaks.

12. A — A only
Only Technician A is correct. Spring brakes apply when air is exhausted from the spring brake chambers. A restricted exhaust port in the control valve would slow down the release of air, causing slow application. Weak power springs (Technician B) would cause reduced holding force, not slow application.

13. D — At least 28%
DOT regulations specify that a vehicle's parking brake system must be able to hold at least 28% of the vehicle's service brake capacity. This ensures that the parking brake has sufficient holding power for the vehicle when parked.

14. C — The power spring
The power spring provides the mechanical force for parking brake application in a spring brake chamber. When air pressure is removed from the spring brake chamber, this powerful spring extends to mechanically apply the brakes through the push rod.

15. B — A defective dash control valve
The dash control valve is responsible for monitoring system air pressure and automatically exhausting air from the spring brake chambers when pressure drops below the threshold (typically 40-60 psi). A defective valve would prevent this automatic safety application.

16. A — Faulty governor
A faulty governor is the most likely cause of rapid cycling. The governor controls when the compressor loads and unloads based on system pressure. If it's malfunctioning, it may signal the compressor to cycle on and off too frequently instead of maintaining proper cut-in and cut-out pressures.

17. D — Both A and B
Both technicians are correct. Moisture in the air brake system can cause brake fade during repeated stops due to decreased friction when water is present. It can also freeze in cold weather conditions, potentially blocking air flow through lines and valves.

18. C — Both A and B
Both technicians are correct. A clogged air inlet filter restricts airflow into the compressor, reducing its efficiency and causing slow pressure build-up. Similarly, a leaking compressor discharge line would allow compressed air to escape, resulting in a slower pressure build in the system.

19. B — Compressor
The compressor should be inspected first when diagnosing excessive oil in the air system. A worn compressor with excessive piston ring or cylinder wear can allow oil to bypass into the compressed air, contaminating the entire system.

20. A — Excessive moisture in the air tanks
Excessive moisture in the air tanks indicates that the desiccant material in the air dryer has lost its effectiveness and needs replacement. The desiccant's primary function is to remove moisture from compressed air before it enters the reservoirs.

21. D — Faulty purge valve
A faulty or stuck purge valve is the most likely cause when no air is released during the compressor unloading cycle. The purge valve should open to release collected moisture and contaminants when the compressor cycles to the unloaded phase.

22. C — 45 seconds
FMVSS 121 requires that the air pressure must build from 85 to 100 psi within 45 seconds at engine idle speed. This ensures the vehicle can recover adequate brake system pressure within a reasonable time after multiple brake applications.

23. B — Improperly adjusted pressure switch
An improperly adjusted pressure switch would cause the low air pressure warning to activate at the wrong pressure. Federal regulations require the low air warning to activate at no less than 60 psi.

24. A — Governor
The governor should be checked first because it controls the maximum system pressure by regulating when the compressor unloads. If the governor is functioning properly, it should stop the compressor from building pressure once the cut-out pressure (typically 120-135 psi) is reached.

25. D — Apply soapy water to suspected areas
Using soapy water on suspected areas is the most accurate method to find air leaks. When applied to fittings, valves, or other components, the soapy solution will bubble at the exact point of leakage, allowing precise identification of the problem area.

26. C — 3 psi per minute
The maximum allowable air pressure drop in a static leakage test with service brakes applied is 3 psi per minute. A greater pressure drop indicates excessive leakage in the brake system that needs to be addressed.

27. B — Faulty compressor
A faulty compressor with worn piston rings or cylinders is the most likely cause of excessive oil being expelled through the air dryer purge valve. This allows oil to bypass normal sealing and enter the air system where it eventually collects in the air dryer.

28. A — Build system to full pressure, turn off engine, release and apply brakes, and monitor pressure loss
The proper procedure is to build the system to full pressure, turn off the engine, release and apply the brakes, and monitor pressure loss over time. This tests both the static system (parked with no brakes applied) and the dynamic system (with service brakes applied) for leaks.

29. D — Air pressure gauge
The air pressure gauge should be checked first when it displays inaccurate readings. Gauge malfunction can result in incorrect pressure readings, potentially leading to improper operation based on false information about the system's condition.

30. C — Prevent air from flowing back to the compressor from the reservoir
The function of the one-way check valve is to prevent air from flowing back to the compressor from the reservoir. This ensures that compressed air stays in the tank when the compressor is in the unloaded phase or if there's a compressor failure.

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