

ASE School Bus Technician Brakes Certification (S4) Practice Sample Study Guide



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SAMPLE

Questions

SAMPLE

- 1. What happens if the air system pressure drops below the necessary level?**
 - A. The brakes will engage automatically**
 - B. The vehicle will remain stationary**
 - C. Braking performance may be compromised**
 - D. The air compressor will shut off**
- 2. What is the maximum allowable leakage at the reservoir safety valve?**
 - A. There should be no leakage**
 - B. It should not exceed a 1 inch soap bubble every ten seconds**
 - C. It should not exceed a 3 inch soap bubble every three seconds**
 - D. It should not exceed a 2 inch soap bubble every five seconds**
- 3. What is a common consequence of low brake fluid levels in a hydraulic brake system?**
 - A. Increased braking power**
 - B. Inconsistent brake response**
 - C. Longer lifespan of brake components**
 - D. Improved fuel efficiency**
- 4. What can a defective push-pull valve cause?**
 - A. Improved brake release timing**
 - B. Enhanced brake efficiency**
 - C. Premature spring brake application and brake drag**
 - D. Positive wheel alignment**
- 5. How does moisture impact an air brake system?**
 - A. Can facilitate smoother operation of brakes**
 - B. Can cause corrosion and freezing in cold weather**
 - C. Can improve air flow within the system**
 - D. Has no effect on the brake system**

- 6. What is an indication of brake drag in a hydraulic system?**
- A. Reduced braking effectiveness**
 - B. Increased pedal height**
 - C. Excessive heat from brake components**
 - D. Fluid leaks on the ground**
- 7. What is the role of the relay valve in an air brake system?**
- A. To control the temperature of the brake fluid**
 - B. To decrease the speed of response between the control valve and brake chamber**
 - C. To increase the speed of response between the control valve and brake chamber**
 - D. To regulate air pressure in the system**
- 8. What could indicate that air system pressure is too high?**
- A. Clogged air filter**
 - B. Defective governor**
 - C. Excessive wear on brake drums**
 - D. High humidity levels**
- 9. How is the air compressor in an air brake system activated?**
- A. By battery power**
 - B. By engine power and is typically belt-driven**
 - C. By solar energy sources**
 - D. By manual switch control**
- 10. If the master cylinder requires constant addition of brake fluid, what could be wrong?**
- A. Excessive brake pressure**
 - B. Leak past the piston cups**
 - C. Clogged brake lines**
 - D. Worn brake drums**

Answers

SAMPLE

1. C
2. C
3. B
4. C
5. B
6. C
7. C
8. B
9. B
10. B

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Explanations

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1. What happens if the air system pressure drops below the necessary level?

- A. The brakes will engage automatically**
- B. The vehicle will remain stationary**
- C. Braking performance may be compromised**
- D. The air compressor will shut off**

When the air system pressure drops below the necessary level, braking performance may be compromised. In air brake systems, the appropriate pressure is crucial for the operation of the brakes. If pressure falls below the required threshold, the brakes may not function effectively, leading to reduced stopping power or delayed response. This situation can pose significant safety risks, as the vehicle may take longer to stop or not stop at all if the pressure continues to fall. It's essential for bus technicians to monitor and maintain the air pressure in the braking system to ensure optimal performance and safety. Maintaining proper air pressure is vital, as it ensures that the brake chambers can fully apply the brakes when needed. Anything less than the necessary pressure could lead to unsafe driving conditions.

2. What is the maximum allowable leakage at the reservoir safety valve?

- A. There should be no leakage**
- B. It should not exceed a 1 inch soap bubble every ten seconds**
- C. It should not exceed a 3 inch soap bubble every three seconds**
- D. It should not exceed a 2 inch soap bubble every five seconds**

The maximum allowable leakage at the reservoir safety valve is defined as not exceeding a 3-inch soap bubble every three seconds. This specification is crucial because it ensures the integrity of the braking system by confirming that any air leakage is kept within a manageable and safe limit. Excessive leakage can lead to diminished braking efficiency, affecting the safety and performance of the vehicle. The measurement method used — observing soap bubbles — provides a straightforward way to assess the condition of the valve. In the context of vehicle maintenance, meeting this standard helps technicians diagnose potential issues before they escalate, ensuring that the braking system functions effectively when needed. Keeping air leaks at the specified level is also a requirement for maintaining compliance with safety regulations in vehicle operation.

3. What is a common consequence of low brake fluid levels in a hydraulic brake system?

- A. Increased braking power**
- B. Inconsistent brake response**
- C. Longer lifespan of brake components**
- D. Improved fuel efficiency**

Low brake fluid levels in a hydraulic brake system can lead to inconsistent brake response. The hydraulic brake system relies on brake fluid to transfer force from the brake pedal to the brake components at the wheels. When the fluid level is low, there may not be enough fluid to create the necessary hydraulic pressure, which can result in delayed or weak braking action. This inconsistency may manifest as a spongy or soft brake pedal feel and can ultimately compromise the safety and effectiveness of the braking system. Adequate brake fluid levels are essential for reliable brake performance, making this consequence particularly critical to address in maintenance.

4. What can a defective push-pull valve cause?

- A. Improved brake release timing**
- B. Enhanced brake efficiency**
- C. Premature spring brake application and brake drag**
- D. Positive wheel alignment**

A defective push-pull valve can lead to premature spring brake application and brake drag. The push-pull valve plays a crucial role in controlling the application and release of the spring brakes in a vehicle's air brake system. If this valve malfunctions, it may not fully release the springs when the driver applies the brakes, which can result in unintended brake application and cause the brakes to drag. This situation can lead to increased wear on the brake components, overheating, and potential safety hazards due to inconsistent braking performance. Therefore, recognizing the importance of the push-pull valve's proper function is essential for maintaining optimal brake operation and ensuring vehicle safety.

5. How does moisture impact an air brake system?

- A. Can facilitate smoother operation of brakes**
- B. Can cause corrosion and freezing in cold weather**
- C. Can improve air flow within the system**
- D. Has no effect on the brake system**

Moisture can have a detrimental impact on an air brake system primarily because it can lead to corrosion of components and freezing in cold weather conditions. When moisture enters the air brake system, it can condense and accumulate, especially in the air lines and tanks. This accumulation can promote rust and other forms of corrosion on metal parts, which can compromise the integrity and function of the brake system. Additionally, in freezing temperatures, the moisture can freeze, potentially leading to blockages in the air lines and malfunctioning of the brake valves. This is particularly critical as it can prevent the system from building up the necessary air pressure for proper brake operation, leading to impaired braking performance and safety hazards. Overall, the presence of moisture introduces risks that can significantly adversely affect the operation and reliability of an air brake system, making it crucial for technicians to regularly inspect and maintain these systems to ensure they are free from moisture accumulation.

6. What is an indication of brake drag in a hydraulic system?

- A. Reduced braking effectiveness**
- B. Increased pedal height**
- C. Excessive heat from brake components**
- D. Fluid leaks on the ground**

An indication of brake drag in a hydraulic system is the excessive heat generated from the brake components. Brake drag occurs when the brake pads or shoes stay in contact with the rotor or drum after the brakes are released. This lingering contact leads to increased friction, which subsequently generates abnormal heat. As the temperature rises, it can cause discoloration of the braking components, warp rotors, or even lead to brake fade, significantly affecting the performance and safety of the braking system. In the context of a hydraulic braking system, monitoring for excessive heat is crucial since it can also lead to premature wear of components or failure of brake fluid due to overheating. Proper maintenance and checks can help in identifying such issues before they become serious problems.

7. What is the role of the relay valve in an air brake system?

- A. To control the temperature of the brake fluid**
- B. To decrease the speed of response between the control valve and brake chamber**
- C. To increase the speed of response between the control valve and brake chamber**
- D. To regulate air pressure in the system**

The relay valve in an air brake system serves the purpose of increasing the speed of response between the control valve and the brake chamber. This component is crucial in ensuring that the brakes engage quickly and effectively when the driver applies pressure to the brake pedal. When the driver activates the brake system, air is sent to the control valve. Instead of having to send all that air directly to the brake chambers, which could result in delays due to distance and volume, the relay valve allows for a more efficient transmission of air. It does this by receiving a smaller signal from the control valve and quickly amplifying it to send a larger volume of air to the brake chamber. This rapid response helps improve the overall performance and safety of the braking system by minimizing any delay in brake application. Understanding the function of the relay valve is essential for technicians as it plays a vital role in brake responsiveness, ensuring that the vehicle can stop effectively when required.

8. What could indicate that air system pressure is too high?

- A. Clogged air filter**
- B. Defective governor**
- C. Excessive wear on brake drums**
- D. High humidity levels**

A defective governor could indicate that air system pressure is too high because the governor is responsible for regulating air pressure in the system. When functioning correctly, the governor allows air to build up to a certain level, at which point it releases the excess pressure by venting it to the atmosphere. If the governor fails, it may either allow pressure to build up beyond the intended level or fail to release air when it reaches its set point. This can lead to dangerously high air pressure in the system, potentially causing issues like brake system failure or damage to air components. The other options may contribute to brake system inefficiencies but do not directly cause high air pressure. A clogged air filter would restrict airflow, potentially leading to a decrease rather than an increase in pressure. Excessive wear on brake drums is indicative of braking issues and can arise from various factors, but it does not serve as a direct cause or indicator of high air system pressure. High humidity levels can affect the air supply in terms of moisture content but does not inherently indicate that the system pressure itself is too high.

9. How is the air compressor in an air brake system activated?

- A. By battery power**
- B. By engine power and is typically belt-driven**
- C. By solar energy sources**
- D. By manual switch control**

The air compressor in an air brake system is activated by engine power and is typically belt-driven. This means that the compressor is mechanically connected to the engine, often using a belt that transfers the engine's rotational energy to the compressor. As the engine runs, it powers the compressor, which, in turn, compresses air and sends it into the air brake system. This setup is efficient for heavy vehicles like buses, which need a reliable source of power for the braking system to operate effectively under various conditions. The reliance on engine power ensures that the compressor can provide a continuous supply of compressed air as long as the engine is running. The other methods mentioned, such as battery power, solar energy sources, or manual switch control, are not suitable for activating the air compressor in a vehicle's air brake system, as they do not provide the necessary mechanical energy or continuity needed for reliable operation. Instead, those options would be more appropriate for different systems but are not applicable to the air brake compressor's standard operation.

10. If the master cylinder requires constant addition of brake fluid, what could be wrong?

- A. Excessive brake pressure**
- B. Leak past the piston cups**
- C. Clogged brake lines**
- D. Worn brake drums**

When a master cylinder requires constant addition of brake fluid, it typically indicates that there is a problem with the integrity of the hydraulic system, specifically involving the piston cups within the master cylinder. If the piston cups are worn or damaged, brake fluid can seep past them, leading to a loss of hydraulic pressure and requiring frequent top-ups. This not only reduces the effectiveness of the braking system but could potentially lead to a complete brake failure if not addressed promptly. In contrast, excessive brake pressure would not directly cause a need for additional brake fluid; it might lead to other issues like premature brake wear or overheating. Clogged brake lines could create pressure problems but would usually become more evident through symptoms like brake dragging or inconsistent brake performance rather than a need for more fluid. Worn brake drums might lead to more brake-related issues, such as poor braking performance, but they don't impact the fluid levels in the master cylinder directly. Thus, the observation of needing to constantly add fluid points to the failure of the piston cup seals.